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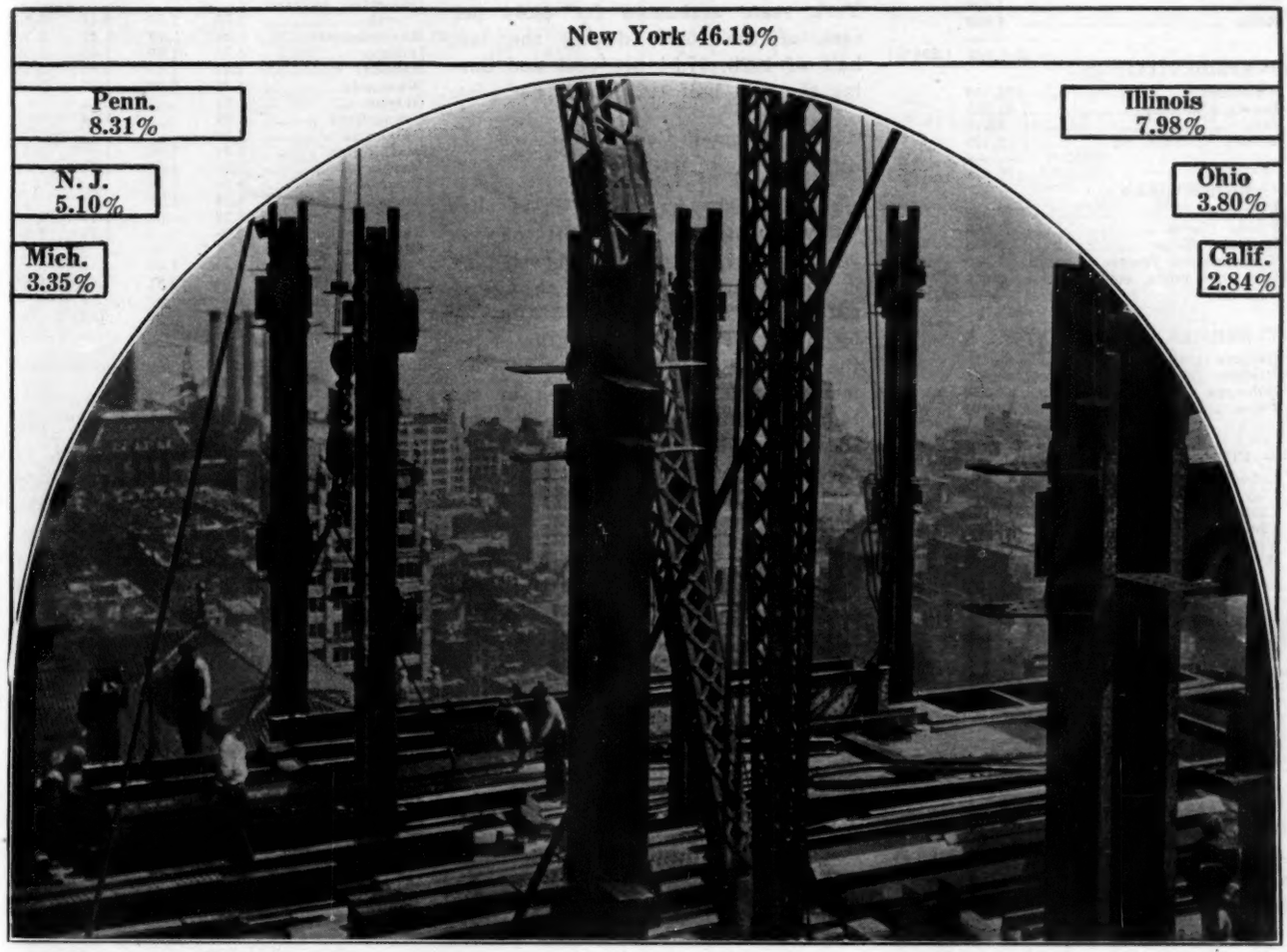


Large Individual Awards Keep East in Structural Limelight

By W. H. Lloyd

Associate Editor, Iron Trade Review

PARTICULARLY large individual projects awarded in metropolitan New York, enabled that district to continue to hold the center of the structural steel market stage during the last half of 1929. Of total lettings of 1,019,875 tons, 470,040 tons, or 46 per cent, represented 61 projects, the majority in greater New York, which took 3000 tons or more apiece. This left 987 jobs in the 100 to 2999-ton range to make up the remainder, 549,835 tons. As revealed by the

Table I

Distribution by Type

258—COMMERCIAL:		
Office buildings, lofts, etc.	115,223	
Banks	50,660	
Hospitals	34,220	
Railroad stations, etc.	25,550	
Telephone buildings	22,275	
Stores	20,425	
Garages	12,910	
Warehouses	8,691	
Aviation	8,545	
Theaters	4,696	
Radio	1,400	
	304,595	(.298%)
108—RESIDENTIAL:		
Apartments	124,169	
Hotels	42,525	
Jails	4,595	
Homes	2,120	
	173,409	(.17%)
264—INDUSTRIAL:		
Factories	122,688	
Power Plants	39,985	
Railroad Shops	8,250	
Transmission Towers	7,950	
Cars, car parts, etc.	2,850	
	181,723	(.178%)
267—BRIDGES, SUBWAYS, ETC.:		
Bridges (railroad)	96,810	
Bridges (city, county, state)	90,525	
Subways	69,320	
Piers	3,885	
	260,540	(.256%)
142—PUBLIC BUILDINGS:		
Schools	47,389	
City, county, state	24,362	
Clubs, etc.	14,965	
Churches, convents, etc.	3,890	
Fraternal buildings	3,275	
Armories, stadiums, etc.	786	
	94,667	(.093%)
9—EXPORTS	4,941	(.005%)
	1,019,875	(100%)
27—CANADA	28,560	
	1,048,435	

tenth semiannual survey conducted by IRON TRADE REVIEW based on its weekly compilations of fabricated structural steel awards for the country, New York territory not only led all other districts but took an even greater proportion of the total tonnage let than in former surveys. The figures, as revised to eliminate duplications and alterations, aggregate 1,019,875 tons for the United States, of which New York state accounted for 46.19 per cent, or 471,157 tons. Of the latter amount, Greater New York was responsible for 430,521 tons. During the first half of 1929, New York state accounted for 28.64 per cent of the total; during the last half of 1928, 37.54 per cent and during the first half 1928, 24.03 per cent.

Many Small Contracts Listed

This total of 1,019,875 tons, as recorded weekly by IRON TRADE REVIEW during the last half of the year, with 1,109,300 tons reported by it during first half, gives an aggregate for 1929 of 2,129,175 tons or 55 per cent of the total listed by the United States department of commerce, 3,850,000 tons. Much of the tonnage as reported by the government includes jobs involving less than 100 tons apiece, to which no attention is paid by IRON TRADE REVIEW.

Eastern states, New York, New Jersey and Pennsylvania, saw total awards during last half of 1929, representing 59.60 per cent of the total. This compares with 47.60 per cent during the comparable period in 1928 and with 45.41 per cent during first half of 1929.

As previously indicated, large individual lettings played an important part in creating this new high record for the eastern seaboard. In New York city, for instance, the 85-story Empire State building alone

Table II

Record of Total Awards

State	July-Dec. 1929	Jan.-June 1929	July-Dec. 1928	Jan.-June 1928
New York	46.19	28.64	37.54	24.03
Pennsylvania	8.31	13.03	6.45	10.89
Illinois	7.98	5.75	9.92	14.82
New Jersey	5.10	3.74	3.61	3.55
Ohio	3.80	6.33	7.06	9.12
Michigan	3.35	5.57	3.86	1.97
California	2.84	7.13	3.44	5.07
Unlocated railroad work	2.53	1.52	3.48	3.54
Massachusetts	1.98	1.49	1.47	3.16
Indiana	1.76	1.60	2.60	1.22
Missouri	1.67	1.13	3.84	1.62
Wisconsin	1.42	2.03	1.57	1.44
Oregon	1.21	.....	.....	.....
Connecticut	1.03	.....	1.04	.....
Oklahoma	1.02	.....	.....	.....
Washington	0.84	1.03	1.86	1.47
Maryland	0.66	1.68	1.74	1.49
Virginia	0.59	5.14	.....	.....
Alabama	0.33	1.27	.....	.....
North Carolina	0.28	.....	1.10	1.05
Kentucky	0.07	.....	1.78	1.80
District of Columbia	.....	2.61	.....	.....
All other states	7.04	10.31	7.64	13.63
	100	100	100	100

called for 55,000 tons. This ran the lettings for the week of Dec. 19 to 92,030 tons, the highest weekly total in more than five years. The 1928 last half peak came in September. Included also in the list of large jobs let were the New Waldorf hotel, 27,100 tons; Farmers' Loan & Trust Co. bank building, 18,000 tons; New Cornell hospital units, 17,500; six subway projects, 6800, 8100, 9400, 12,500, 13,200 and 18,700 tons; a Long Island, N. Y., grade crossing elimination, 7000 tons; at least eight apartments, taking 5100 to 9000 tons apiece; a downtown club, 6000 tons; King's county hospital, 5850 tons; and a 5000-ton department store.

Not alone in greater New York,

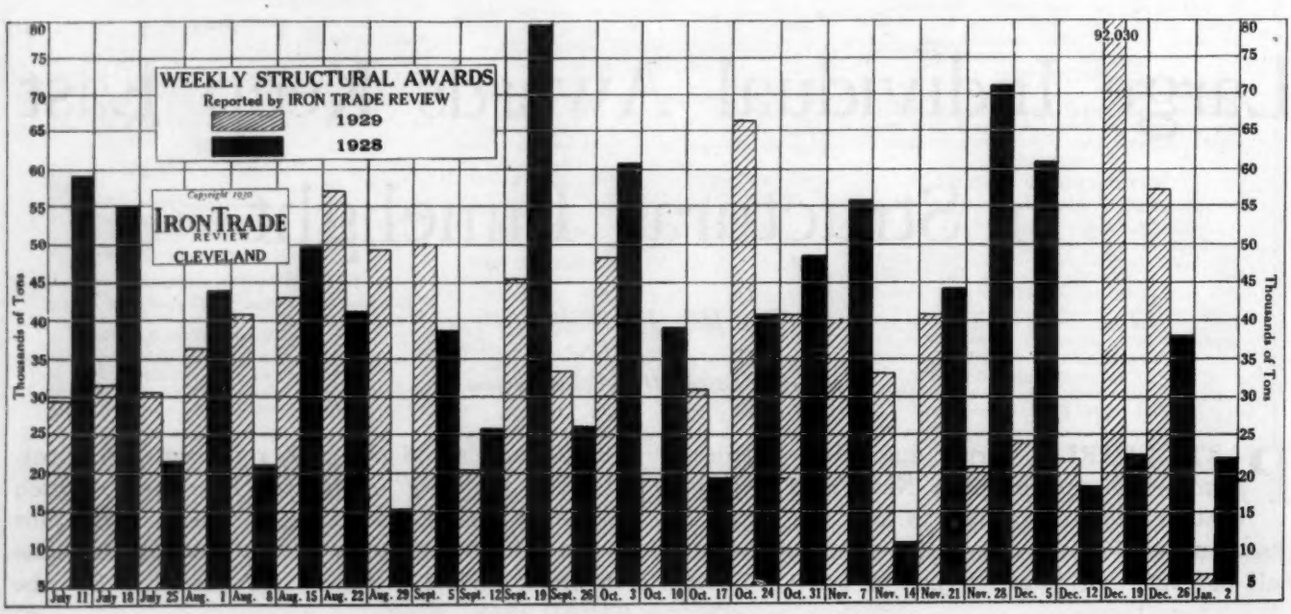


Table III

Distribution by States According To Use

State	Commercial No. Projects	Commercial Tons	Residential No. Projects	Residential Tons	Industrial No. Projects	Industrial Tons	Bridges, etc. No. Projects	Bridges, etc. Tons	Public Buildings No. Projects	Public Buildings Tons
Alabama	6	1,765	..	....	3	1,320	2	350	..	....
Arizona	1	830	..	....	3	1,600	2	422	..	....
Arkansas	..	....	..	....	1	325	3	2,100	..	....
California	28	11,710	19	4,876	16	5,438	15	5,790	9	1,270
Colorado	1	525	..	....	..	....	2	1,900	..	....
Connecticut	5	3,255	..	....	4	3,856	2	1,100	2	2,350
Delaware	1	125	..	....	3	1,400	..	....	1	250
Dist. of Columbia	..	....	..	....	..	....	..	....	..	....
Florida	1	200	1	400	1	275	..	....	..	....
Georgia	3	725	..	....	1	2,000	2	980	..	....
Idaho	..	....	..	....	..	....	1	257	..	....
Illinois	19	17,285	1	200	26	37,190	15	16,210	11	10,585
Indiana	6	3,440	..	....	15	4,770	4	9,095	3	666
Iowa	..	....	..	....	..	....	1	150	..	....
Kansas	..	....	..	....	1	600	..	....	..	....
Kentucky	1	800	..	....	..	....	..	....	..	....
Louisiana	..	....	..	....	5	4,550	2	1,350	1	100
Maine	..	....	..	....	1	3,500	1	200	1	165
Maryland	2	500	1	300	2	3,200	5	2,290	1	500
Massachusetts	15	9,236	1	350	20	4,932	8	3,320	13	2,457
Michigan	10	9,825	1	100	17	18,510	11	3,040	8	2,790
Minnesota	2	2,080	..	....	1	1,900	1	1,550	..	....
Mississippi	..	....	..	....	1	150	2	325	2	270
Missouri	4	1,500	1	1,200	3	2,430	5	11,575	1	375
Montana	..	....	..	....	..	....	..	....	..	....
Nebraska	3	4,500	..	....	2	750	1	500	..	....
Nevada	..	....	..	....	..	....	..	....	..	....
New Mexico	1	100	..	....	..	....	..	....	..	....
New Hampshire	2	300	..	....	1	125	1	100	1	107
New Jersey	11	15,395	2	3,900	11	11,378	10	18,815	5	2,550
New York	65	160,056	71	153,953	18	19,440	32	92,566	52	45,142
North Carolina	4	1,080	..	....	3	650	3	540	2	600
North Dakota	..	....	..	....	..	....	..	....	..	....
Ohio	19	13,186	3	1,900	18	4,635	14	14,135	10	4,960
Oklahoma	..	....	2	3,400	2	3,700	3	3,400	..	....
Oregon	3	1,700	..	....	5	1,825	4	8,905	..	....
Pennsylvania	31	38,330	5	2,830	27	13,459	23	11,925	16	18,405
Rhode Island	1	300	..	....	2	370	1	900	..	....
South Carolina	..	....	..	....	1	700	1	350	..	....
South Dakota	..	....	..	....	..	....	..	....	..	....
Tennessee	..	....	..	....	10	6,695	1	350	..	....
Texas	2	3,000	..	....	4	1,160	6	2,808	..	....
Utah	..	....	..	....	..	....	1	145	..	....
Vermont	..	....	..	....	1	550	3	2,125	1	175
Virginia	..	....	..	....	7	4,100	6	1,990	..	....
Washington	4	545	..	....	6	2,580	12	5,170	1	300
West Virginia	..	....	..	....	8	3,850	4	2,325	..	....
Wisconsin	5	2,032	..	....	13	7,450	8	4,445	1	650
Wyoming	2	370	..	....	1	360	1	1,200	..	....
Unlocated R. R. Wk.	..	....	..	....	..	....	48	25,850	..	....
	258	304,595	108	173,409	264	181,723	267	260,540	142	94,667

Exports 9—4941
Canada 27—28,560

however, were large awards encountered. In Chicago, for instance, 20,000 tons for a beam mill at South Chicago for the Illinois Steel Co. was awarded and an item of bridge work in Chicago, involved 7000 tons. The White river bridge at Indianapolis took 6270 tons, the St. Johns bridge at Portland, Oreg., required 8300 tons, while the Maumee river suspension bridge at Toledo, O., called for 7000 tons, and the St. Louis free bridge, 5800 tons. Pennsylvania railroad bridges and a suburban station at West Philadelphia, Pa., represented 16,000 tons; a passenger bridge over the Hackensack river in New Jersey, took 10,000 tons, while a freight bridge at the latter point involved 4500 tons. Another large New Jersey award was the Ford Motor Co.'s assembly plant at Edgewater, N. J., 6800 tons. A convention hall at Philadelphia meant 7000 tons for the successful fabricator while a municipal building at Buffalo put 7720 tons on mill order books.

Table IV

Leading Cities Compared

City	NO. OF PROJECTS Last Half 1929	NO. OF PROJECTS Last Half 1928	TONNAGES —Last Half— 1929	TONNAGES —Last Half— 1928
New York*	174	157	430,521	842,900
Chicago	44	63	60,540	78,680
Cleveland	35	29	13,286	23,834
Philadelphia	31	37	44,455	21,693
Detroit	18	27	11,730	17,614
Pittsburgh	13	21	11,400	13,271
San Francisco	21	20	6,365	9,101
Los Angeles	12	21	7,582	8,889
Boston	17	9	10,822	7,457

*Metropolitan New York, including Long Island, but not New Jersey suburbs.

Apartments Lead in Tonnage

As indicated in Table I, page 82, apartments (largely in New York city) led all other types of buildings, accounting for 124,169 tons, against 122,688 tons for factories and 115,223 tons for office buildings, etc. Buildings of a commercial type, as distinguished from industrial or residential, involved 304,595 tons or 29.8 per cent of the total; bridges, subways, etc., involved 25.6 per cent; industrial and residential, 17.8 and 17 per cent, respectively. A full comparison is shown in Table I.

Schools, it will be noted, occupied a prominent place in the public building classification, accounting for about half the tonnage accredited to public buildings. Power plants involved an appreciable tonnage in the industrial category, 39,985 tons, and while hotels might properly be included under the commercial head, they are classed under residential and involve 42,525 tons, being second to apartments, representing 124,169 tons. Aviation required 8545 tons for hangars, airports, etc., during the last half of 1929.

Industrial expansion declined considerably in the closing half of the

Table V

Totals Listed by States

State:—	Number of projects July-December 1929	Number of projects July-December 1928	Tons July-December 1929	Tons July-December 1928
Alabama	11	17	3,435	7,290
Arizona	6	3	2,852	1,085
Arkansas	4	1	2,425	900
California	87	83	29,084	34,203
Colorado	3	1	2,425	500
Connecticut	13	8	10,561	10,305
Delaware	5	....	1,775	.....
District of Columbia	....	7	.....	9,750
Florida	3	5	875	620
Georgia	6	3	3,705	1,421
Idaho	1	....	257	.....
Illinois	72	94	81,470	98,573
Indiana	28	38	17,971	25,878
Iowa	1	2	150	660
Kansas	1	2	600	1,000
Kentucky	1	6	800	17,715
Louisiana	8	10	6,000	8,747
Maine	3	4	3,865	2,870
Maryland	11	12	6,790	17,255
Massachusetts	57	29	20,295	14,596
Michigan	47	66	34,265	38,342
Minnesota	4	6	5,530	6,647
Mississippi	5	1	745	175
Missouri	14	20	17,080	38,134
Montana	....	4	.....	1,920
Nebraska	6	4	5,750	3,300
Nevada	....	2	.....	1,106
New Mexico	1	....	100	.....
New Hampshire	5	....	632	.....
New Jersey	39	48	52,038	35,862
New York	238	206	471,157	373,063
North Carolina	12	19	2,870	10,926
North Dakota	....	2	.....	1,294
Ohio	64	77	38,816	70,169
Oklahoma	7	3	10,500	1,705
Oregon	12	4	12,430	863
Pennsylvania	102	108	84,849	64,060
Rhode Island	4	1	1,570	1,200
South Carolina	2	....	1,050	.....
South Dakota	....	....	.....	.....
Tennessee	11	6	7,045	5,200
Texas	12	7	6,960	4,444
Utah	1	1	145	135
Vermont	5	7	2,850	1,880
Virginia	13	11	6,090	7,038
Washington	23	30	8,595	18,528
West Virginia	12	9	6,175	3,839
Wisconsin	27	23	14,577	15,990
Wyoming	4	....	1,930	.....
Unlocated railroad work	48	37	25,850	34,550
Exports of miscellaneous	9	1	4,941	100
	1048	1027	1,019,875	993,838

year. Whereas 264 projects involved 181,723 tons in the July-December period 1929, 341 jobs called for 221,009 tons in the last half of 1928. A drop from the first half, 1929, also was recorded since in that period 403 jobs took 305,306 tons. On the other hand, commercial types of buildings increased from 185 jobs, taking 285,173 tons in the last half 1928, to 258 structures, requiring 304,595 tons in the last half, 1929. The last half, 1929, also registered a slight increase over the initial half of that year, when 190 commercial projects were listed, using 280,330 tons.

While Pennsylvania held second place in total awards throughout 1929, third place, held by California in the first half, went to Illinois in the last half. New Jersey, fourth in the last half, was eighth in the first half. Ohio dropped from fourth during the first half to fifth during the final period. Michigan was sixth all year. Comparisons are shown in Table II.

Among leading cities New York consumed 430,521 tons during first half, an increase of 87,621 tons over the last half of 1928. Chicago with 60,540 tons took 18,140 tons less than during the final half of 1928. Cleveland also fell off from 23,834 tons to 13,286. A full comparison is shown in Table IV.

New York Leads Cities

While most eastern states registered increases during the closing six months of 1929, over the comparable period of the preceding year, some southern and western states also came in for proportionate increases. Colorado increased from 500 to 2425 tons; Nebraska from 3300 to 5750 tons; Oklahoma from 1705 to 10,500 tons; Oregon from 863 to 12,430 tons; Tennessee from 5200 to 7045; Texas, from 4444 to 6960; and Wisconsin, 3839 to 6175. California, however, showed a decline, as did Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Minnesota, Missouri, Ohio and others. Details are shown in Table V.

Dominance of small tonnage jobs is proverbial in western states. The great majority of these are not included in any of these compilations since they involve less than 100 tons at a time. The statement however, is borne out by the fact that while California's last half, 1929, tonnage lettings decreased 5119 tons, from the final period of 1928, the number of projects increased from 83 to 87.

Exports totaling 4941 tons included a 2000-ton hotel in Cuba, 650 tons for hangars in Brazil; 450 tons for a canning plant in the Philippine islands; 375 for railroad buildings in Rio de Janeiro, a similar tonnage for a subway in the Argentine; 391 tons for a steel flume in Brazil, 350 tons for a grandstand in Mexico; 250 tons for a canning plant in Tahiti and 100 tons for bridges in Brazil.

Introduces New Process To Descale Metals

Following four years of research work, the Bullard Co., Bridgeport, Conn., has perfected a new method for removing scale and metallic oxides formed in the heat treatment of metals. According to E. P. Bullard, president of the company, the Bullard-Dunn process, as it is known, utilizes a new principle in electrochemistry and accomplishes by an electrochemical bath the metal finishing functions heretofore accomplished only by sandblasting and pickling. All commercial metals can be treated by the new process.

Preparation of heat treated metallic parts for subsequent operations, such as grinding, polishing and electroplating, is the direct purpose of the process. It can be used also in preparing metal for intricate mechanisms wherein scale or metallic oxides, freed from the involved parts by vibration or impact, might become mixed with lubricants to form abrasives.

It is said that the method does not pit the surface of the metal, thus eliminating the necessity for refinishing. Other advantages claimed are: It renders the products semirust resisting; it eliminates danger from hydrogen embrittlement; it lengthens the life of the material treated and extends the possible uses of the metal; it produces a surface which takes a better plate and reduces costs.

A motor-generator set and suitable tanks constitute the equipment required and the application can be made in a small plant as well as a large one. The operations can be performed by unskilled workmen and only a few are needed. The inventors point out that the process effects market savings in the polishing of stainless steel. Eight grindings now are necessary before the steel attains its final polish, but when the steel is descaled electrochemically, only two are required.

Many new applications for the process have been developed, including the descaling of long lengths of pipe, such as electrical conduits, which must have a smooth inner surface to prevent cutting wire insulation. It is intimated that many new methods of manufacture are expected, particularly as to plating and painting. Research still is going on in the Bullard laboratories to determine the field and adaptability for the process.

Testing Materials Group Revises Standards

Consideration of new test programs, the development of new standards and the revision of existing standards formed the discussion topic for committee A-1, on steel of the American Society for Testing Materials meeting in Philadelphia recently. A number of subcommittees held meetings in conjunction with committee A-1 and contributed to the development of the new projects.

A revision of the present tentative specifications for tie plates is contemplated, in respect to banding, to make it clear that the section is that of the plate and not of the rail, indicating that one section of tie plate might be suitable for more than one rail section.

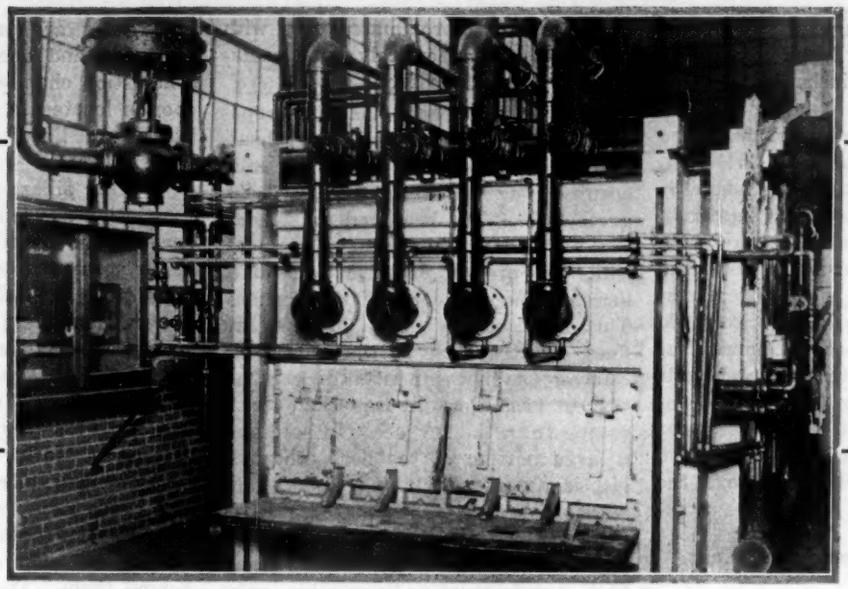
A subcommittee on boiler steel has made substantial progress in the development of proposed specifications for open-hearth iron plates of flange quality for boilers. This work is being carried out as a result of a request by the boiler code committee of the American Society of Mechanical Engineers. The code includes specifications for ingot iron suitable for unfired pressure vessels.

May Change Analysis Method

Changes in the standards methods of chemical analysis of plain carbon steels are being considered. The carbon, manganese, silicon and possibly sulphur and copper determinations may be modified on certain types of steel. New methods for the determination of aluminum and alumina are to be developed.

Agreement has been reached with the Society of Automotive Engineers for increasing the sulphur limits of bessemer screw stock from the present range of 0.075 to 0.15 per cent to 0.10 to 0.18 per cent in the standard specifications for commercial cold-finished bar steels and cold-finished shafting in order to improve the machinability.

The committee proposes to recommend for advancement to standard the present tentative revisions of the standard specifications for billet-steel concrete reinforcement bars, which revisions cover the elimination of the present recommendation that the intermediate grade be used unless otherwise specified. An increase in the allowable tensile range with no decrease in the present minimum ductility and an increase in the phosphorus limit in acid steels are involved.



Billet heating furnace from the discharge end, showing arrangement of gas burners and inspirators which maintain automatically the ratio of gas to air

Forging Practice Modernized by Mechanical Handling

Installation for Forging Rotary Tool Joints Includes Cranes, Conveyors, Porter Bars and Improved Heating and Normalizing Furnaces

By C. B. Phillips

Vice President, Surface Combustion Co., Toledo, O.

REDUCING the ancient art of forging to an exact science has required a great deal of time as it has been only recently that this subject received the attention commensurate with its importance. From the time the raw material is received, until the forging is delivered to the machine shop, the problem is almost entirely one of metallurgy, involving heating for the forming operation, working under the hammers, and normalizing to relieve the strains set up.

One of the largest manufacturers of oil well supplies recently has installed equipment for making rotary tool joints and the set-up is considered to be the most modern of its kind in the world. The raw material worked consists of alloy steel bars which are first cut to the proper lengths in a lathe. At the same time, a hole is drilled for the porter bar which provides a means of handling the piece from the furnace to the upsetter.

The pieces are discharged from the cutting machine upon an apron-type conveyor which carries them to concrete storage pits at the charging end of the forging furnace. A jib crane with motor and magnet picks up the pieces as needed and drops them upon the loading platform of the furnace, where they are pushed along through the furnace by a mechanical pusher.

Machines Arranged Conveniently

The upsetter, which is of massive construction, is located close to the discharge end of this furnace and as the hot billets come through, they are picked up by a porter bar, suspended from a jib crane, and swung directly into position on the machine.

The forgings then are put upon a cooling conveyor, some 40 feet in length, which operates in a pit below the floor. This conveyor discharges directly upon an elevator conveyor, some 20 feet long, which finally dumps the forgings into another concrete storage bin at the head of the normalizing furnace. This furnace is charged by crane and magnet as was the forging furnace, and when the normalized forgings are pushed out on the unloading table at the discharge end they are handled by crane into other storage bins.

The furnaces used in this setup were developed by the research department of the Surface Combustion Co., Toledo, O., and are fired with gas. The forging furnace is known as a continuous billet heating furnace and is of the

double-row type using two pneumatic pushers. It is 24½ feet long, 6 feet wide and about 20 inches high from the skid rails to the spring line of the arch, internal dimensions. The floor space occupied is 8½ x 35½ feet.

Of brick construction the whole is encased in steel plates and supported by buck stays. The walls are 13½ inches thick and consist of 9 inches of firebrick and 4½ inches of insulation. Low-pressure gas is used through eight water-cooled burners of which two are located on each side close to the discharge end, firing under the hearth, and the other four directly in the discharge end and firing along the arch and above the work.

Fuel Analysis Remains Constant

The burners give a fuel analysis of constant value, regardless of the heat input, and without requiring the furnace operator to adjust the ratio of air to gas. This ratio is maintained automatically with inspirators, the burners being directed in such a manner that uniform heat is maintained throughout the mass. In this way it is possible to make the mixture slightly reducing, thereby eliminating any free oxygen from the interior of the furnace and cutting the formation of scale to a minimum.

The factor of heat distribution is important in order to control the rate of heat input to various parts of the billets. The use of gas as a fuel and a firing system which employs the principles of both radiation and convection, affords a heat distribution which can be approximated only with a fuel, depending entirely upon radiation for heat transfers.

The forging furnace has three separate zones, namely, preheating, heating and soaking, the parts eventually acquiring a temperature of 2300 degrees Fahr. The heat and soak zones are provided with burner equipment, while the preheat chamber is used to increase the efficiency of the furnace. This is accomplished by locating the flues directly back of the inlet door, causing the hot products of combustion to pass through this chamber to escape from the furnace. In so doing, a large portion of the heat otherwise lost is absorbed by the cold incoming work with the result that when the work reaches the heating chamber it already has attained an appreciably high temperature. From this point it is pushed directly into the heating zone and there brought up to full predetermined temperature. It is then held at this temperature in the soaking zone in order to insure a complete equalization of heat throughout the cross section of the material being heated.

Automatic temperature controls with motor operated control valves maintain the correct heat in each zone which is charted on continuous recorders. Production is based on an hourly output of 5715 pounds. This allows a heating cycle of 2 hours for each piece. Cast-iron plates are incorporated at each end of the furnace and the rear wall is supported on water-cooled castings to permit end discharge. Two cast-iron raising-type doors are provided, one at the inlet end and one for the underfired combustion chamber, while a swinging door is located in the discharge chute. These are lined with 4½ inches of firebrick and 2½ inches of insulation.

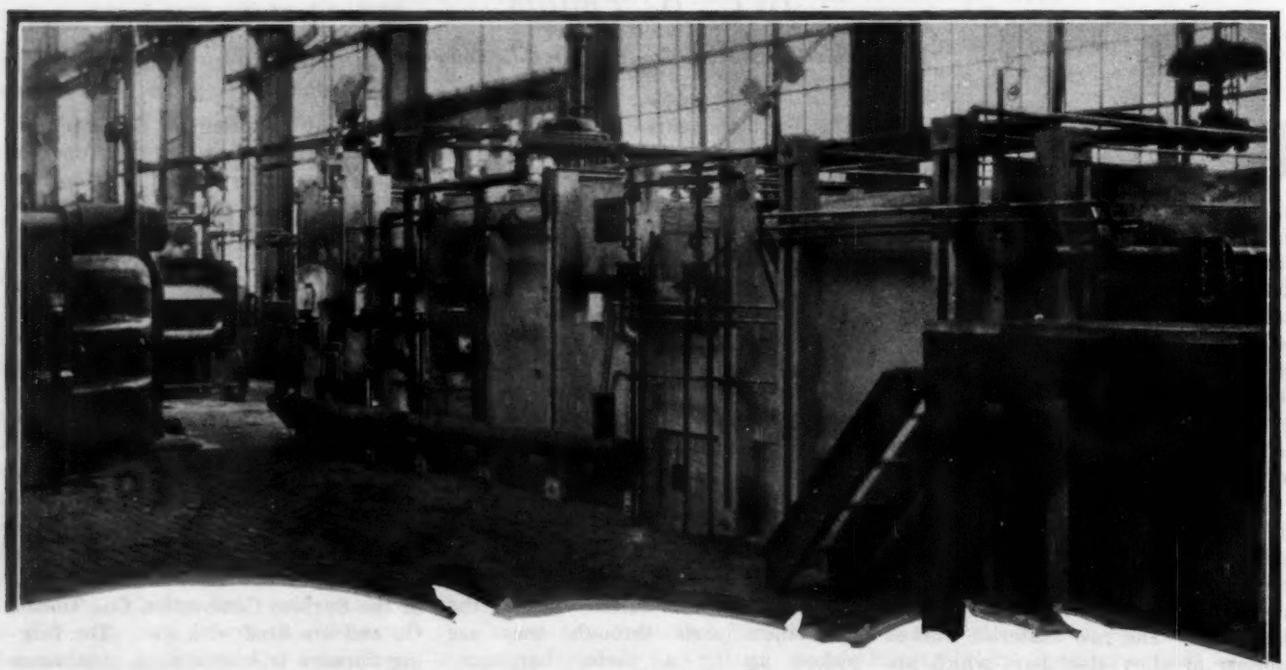
On tile pillars built up from the foundation are laid four double, extra-heavy pipes on which the work rests as it passes through. Cold water is circulated through these pipes and in addition there are two cast-steel water-cooled guide rails to prevent the billets from buckling during heating up. At the exit end of the furnace the hearth slopes down upon an unloading platform. The hot billets are pushed along the hearth until they strike the slope, when they roll down, opening the swinging door by their weight, the door closing automatically behind them. The billets are handled from this table with the porter bar. The skid rail pipes extend along the hearth and down the slope.

Normalizing Furnace Is Continuous

The normalizing furnace also is continuous and autimatic, and of the same general construction as the one just described. The internal dimensions of this furnace are 4 feet from wall to wall by 18 feet long, with a height of 17 inches from the top of the firebrick hearth to the spring line of the arch. The walls and roof consist of 9 inches of firebrick and 9 inches of insulation and the whole is encased in a steel jacket held together with double channel buckstays.

This furnace, too, is divided into

(*Concluded on Page* 92)



Continuous pusher-type gas fired billet heating furnace, from the charging end. The upsetter and normalizing furnace may be seen at the extreme left

Materials for Resisting Corrosion Require Service Tests

Misapplications Are Made Frequently Because Laboratory Tests Suggest Erroneous Conclusions—Each Installation May Present Problems Demanding Special Attention

By P. D. Schenck

President, Duriron Co.

NO MATERIALS or alloys can be termed universally resistant to corrosion, but each has a definite place in industry. Aluminum bronzes, manganese bronzes, monel metal, high-silicon iron, some of the so-called acid-resisting bronzes and to a lesser extent, pure copper and pure nickel are resistant to hot weak solutions of sulphuric acid. Of the alloy steels which will resist this type of corrosion, the only ones as far as known are nickel-chrome steels with appreciably higher percentages of nickel than chromium and steels containing relatively high contents of copper and silicon.

These steels also are unusually resistant to ferric sulphate contents of 1 to 2 per cent encountered in pickling baths and are even more resistant than any of the other alloys mentioned. By eliminating the chromium, it is possible to produce a steel with a nickel content of 20 to 30 per cent, but this steel is somewhat more resistant to hot weak solutions of sulphuric acid, although not nearly so resistant to oxidizing conditions.

Chrome-Nickel Type Is Rust Proof

In a general way, we can say about the chrome-nickel type of steels that where the chromium content is over 12 per cent these steels are resistant to the less severe oxidizing conditions or, in other words, will be rust proof and unaffected by salt spray. This is true especially if 2 to 3 per cent nickel is added. For satisfactory resistance to more severe oxidizing conditions, such as hot strong nitric and glacial acetic acids, the chromium content should be at least 18 per cent and the steel is materially improved in physical characteristics and workability if the nickel content is raised to 8 per cent. This is the type of steel generally known as KA2. For various purposes the carbon and silicon contents are varied.

A rather special type of this steel has proven superior to most others in resisting hot weak sulphite solutions which are used in paper mills. In this type, known as KA4, the nickel and chromium are sometimes raised slightly over the KA2 specifications and from 3 to 4 per cent molybdenum is added. With the exception of this type of steel and some of the special types of bronzes, no other acid resisting materials have proven commercially satisfactory for handling hot sulphite liquors.

It might be well to mention here, that the nomenclature of the various chrome and chrome-nickel alloys has been extremely confusing. The KA2 or 18 per cent chromium 8 per cent nickel type is sold both in the form of rolled products and castings, under 20 to 30 different names. Of course the names themselves mean absolutely nothing unless some one particular manufacturer has demonstrated his ability to furnish a uniform product, properly finished and heat treated. To correct the difficulties with nomenclature, many manufacturers have signified a willingness to refer to the general type of high-chrome nickel steels as Nirosta and they are now trying to work out a simple letter or number system of suffixes to indicate compositions and specified heat treatments.

"Stainless Steel" a Misnomer

The term "stainless steel" used by many steel companies is an unfortunate misnomer. While the actual corrosion resistant steels generally are stainless also, the term stainless has been used so much in connection with the 12-14 per cent chromium grade, which is excellent for cutlery, but does not possess the necessary specific characteristics for resistance to corrosives that the more highly alloyed steels have.

In selecting a steel for a specific use, the advice of organizations thoroughly familiar with not only the metallurgical side of the problem but with all the details of the chemical side of the process for which the steel is to be used, should be sought. Over-

Choosing Proper Alloy

CONSIDERABLE confusion exists in connection with corrosion resistant materials, because of their widely varying compositions and behavior in service. For this reason, much interest attaches to any discussion of the numerous alloys and the particular applications for which they were developed. The accompanying article, prepared from a paper presented before the Buffalo section of the American Society of Mechanical Engineers on Feb. 25, deals particularly with chrome-nickel steels, pointing out conditions under which certain alloys can not be used. A warning is given that laboratory tests often prove misleading in determining the suitability of a material; only tests made in actual service can be taken as conclusive. The author, P. D. Schenck, is president, Duriron Co., Dayton, O.

looking some slight detail from either the metallurgical or chemical standpoint may result in lamentable failures. A few examples will illustrate this.

For several years the company with which the writer is associated has been furnishing various pieces of equipment to a large parchment paper company. The parchmenting is done by running a special grade of paper through strong sulphuric acid baths and thoroughly washing it, and the composition of the sulphuric acid bath was given to us as sulphuric acid with sodium sulphite and some other impurities in it. He furnished samples of various bronzes and steels which we knew would be practically unaffected by this particular corrosive solution. The samples were tested by the paper company and reported as failing to stand up.

To make a long story short, we discovered that the paper company was having difficulty because of the rapid eating away of copper conveyor chains in the solution. This cleared up the whole problem, for while the samples submitted were suitable for sulphuric acid, they were not suitable for copper sulphate, present because of the rapid dissolving of the copper chains. In this particular case, high-silicon iron, which we have developed under the trade name of Duriron, is the only material which will stand the combination of the free sulphuric acid and weak copper sulphate. With the installation of high-silicon iron squeeze rolls, which are exposed alternately to the acid and air, the problem was solved.

Pickling Tanks Present Difficulty

When the copper sulphate content in the solution is appreciably higher, the 18-8 chromium-nickel alloys will do the work, but they will not withstand the high percentage of free sulphuric acid. An example of these conditions is found in tanks for pickling brass and bronze. The high nickel-chromium alloys successfully withstand the sulphuric acid pickling bath, but they are readily soluble in the presence of copper sulphate. On the other hand, the high chromium-nickel alloys will stand copper sulphate, but not sulphuric acid. This problem has been solved successfully by instructing the operators not to replace the free sulphuric acid but to leave an appreciable percentage of copper sulphate, which acts as an inhibitor to the corrosive action.

Another much misunderstood corrosive condition to the average operator is phosphoric acid. It is impossible and ridiculous to make the statement that any one material is resistant to phosphoric acid, for the simple reason that scarcely any two process industries in which phosphoric acid is a factor present the same corrosive conditions. It is not safe to mention any specific composition for a material which could be used without first making tests with the acid. With a great many process industries, 1 to 3 per cent hydrofluoric acid is present in the acid. Phosphoric acid of all strengths and temperatures is handled and we have found that in the same plant where two concentrations of acid are used, it is necessary to furnish two alloys.

In two plants, employing practically the same crude phosphoric acid, but at different concentrations and temperatures, the conditions are so radically different that in one plant KA2 has been used successfully for a year or longer, while in another plant the samples of KA2 placed in the process lines disappeared completely in 5 hours. The solution to this type of problem, of course, is a careful study by men experienced in this type of work and with alloys, to interpret properly the results of comparatively short service tests.

Surface Film Aids Resistance

Not so many years ago our own laboratory, which at that time had no experience with chrome-nickel steels, reported after a series of tests, that high chromium-nickel alloys were totally unaffected by hot weak sulphuric acid. This was so contrary to general knowledge that we investigated further and found the resistance was due apparently to the formation of surface film. When this film was disturbed the material dissolved completely in a few hours.

A statement from a laboratory regarding a depreciation test, in which is specified the reagent, concentration and temperature, is essentially worthless when regarded as data on which to base predictions of alloy life and service. To use laboratory information, it is necessary to know whether the tests were made by simply immersing the sample in a beaker of acid and heating the open beaker on a hot plate for the required number of hours. This type of test is almost certain to be misleading because the solution if dilute is well concentrated during the test and in all probability a film of hydrogen forms on the surface of the sample to protect it from the action of the acid. The losses in weight also vary as much as 100 per cent, even if all the conditions are adhered to, because the difference in the corrosive effect depends upon whether the liquids are agitated and aerated or whether the tests were conducted by alternate immersions or by flowing the solutions over the samples.

Another usual source of errors is the fact that the average chemist will make tests with chemically pure solutions and it is very rarely that such solutions are encountered in the process industries. The disrepute in which laboratory tests are held by a large number of engineers probably is because these and many other conditions are not taken into consideration.

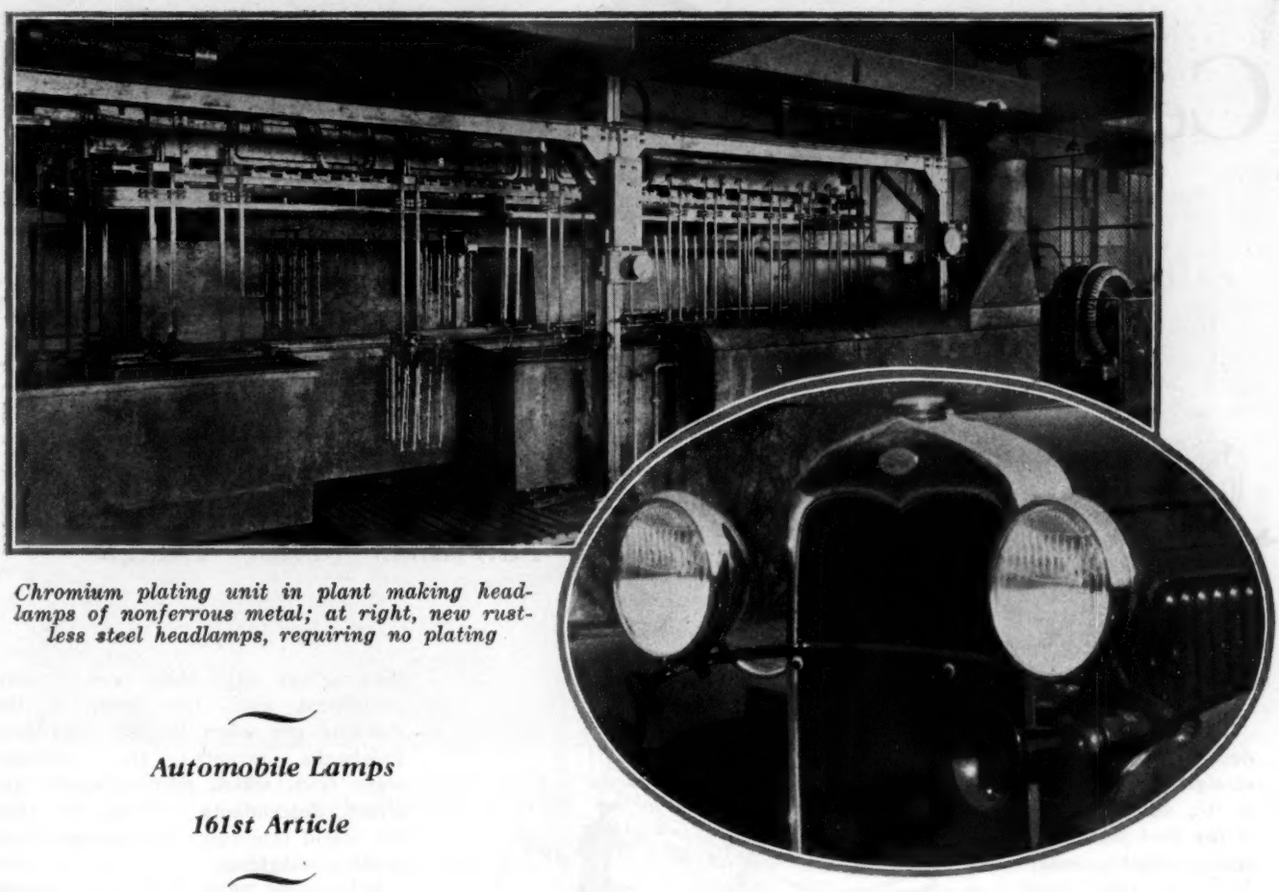
The exact time element, as well as the preparation of the surface of the sample, is an extremely important factor to know. A rough sample often will give a much greater rate of corrosion the first hour than the average rate and, regardless of how the surface is prepared, this is true of many alloys which for their resistance depend upon the formation of insoluble oxide films. In such cases, the initial loss often has been observed to be five times the loss extending over a reasonable period of time.

We regard laboratory tests, if properly conducted and simulating service conditions, as a valuable aid in selecting the proper metals or alloys for specified processes. If the condition is more or less a uniform one, such as in sulphuric acid pickling baths, we feel safe in making a definite recommendation for even a new alloy, as our laboratory and service records date back for years on these conditions and we know that a fairly definite relation exists between the life indicated by laboratory tests and the actual life contained in service.

Careful Tests Required

Where the condition is unusual, however, and we do not possess this data, we feel that a series of carefully made and checked laboratory tests will enable us to recommend a trial installation, such as a valve or pump, as part of the equipment. In this way, the user is saved considerable expense and delay in making service tests based on the recommendation of suggestions of manufacturers of various alloys.

A growing number of laboratories exist today whose continual experience, testing equipment and records will qualify them to make intelligent recommendation. Our suggestion is that these laboratories be consulted and their recommendations be considered much more seriously than reports of the plant laboratories not engaged in this type of work, not having proper equipment to make tests, nor possessing the experience to compare laboratory results with service conditions.



Chromium plating unit in plant making headlamps of nonferrous metal; at right, new rustless steel headlamps, requiring no plating

Automobile Lamps

161st Article

Large Uses of Steel In Small Ways

MORE than 25,000 tons of steel is consumed annually in the United States in the manufacture of headlamps, cowl and tail lamps for automobiles and trucks. Consumption mounted to nearly 30,000 tons in 1929, a year of record production, with 5,358,414 passenger cars and trucks. Ford cars and trucks have been equipped with lamps made of steel, generally enameled. The company now uses a rustless steel. A leading manufacturer of lamps says one-half the lamps on other passenger cars are made of steel, and nearly all of the lamps on the other trucks. The scrap loss is comparatively small, as in blanking out the doors for the headlamps sufficient material is left to make parts for cowl and tail lamps.

Lamp manufacture represents an interesting department of the automobile industry. Steel was beginning to give way to nonferrous metals for lamps for the higher priced cars, especially when notable progress was made in rapid and automatic application of chromium plating. Now that rustless steels are coming to the fore and some large manufacturers are taking the initiative, makers of headlamps see the time approaching when chromium plating equipment will be used less for this purpose, and steel in larger tonnages.

Drawing Ability Weak

The principle drawback to the use of rustless steel for the best cars is the claim that the material cannot be drawn as deeply and sharply as required, without showing fine creases or "draw marks." This obstacle is being overcome, however, as lamp designs are being changed, already noticeable in those for the medium price cars.

A comparison of the processes of manufacture is afforded in the plant of one of the leading companies using steel and nonferrous metal. The latter material comes to the plant from the mills in the form of circular blanks. The lampmaker then performs three drawing operations for the body or shell. The next and succeeding steps are as follows: polising and buffing; washing; punching holes for mounting to brackets and admitting focusing screw and cable; hard buffing; color buffing; washing; nickeling; polishing; chromium plating; polishing; assembly. From this it will be noted there are two plating operations, and six separate polishing and buffing operations.

This manufacturer, using the best equipment available, finds that two-thirds of its labor cost in making such lamps is represented in polishing and buffing.

In the same plant steel is delivered in the form of sheets, a soft, deep-

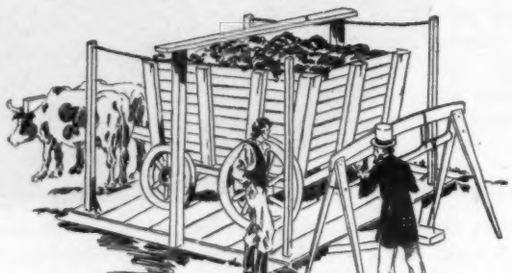
(*Concluded on Page* 92)

Centennial of Platform Scale

Recalls Early Methods

Modern Scales Retain Elements of Thaddeus Fairbanks' First Design

THE Romans are credited with the development of the steelyard about 400 B. C., above. One of the first platform scales, right, was built in 1880 for weighing hemp carts



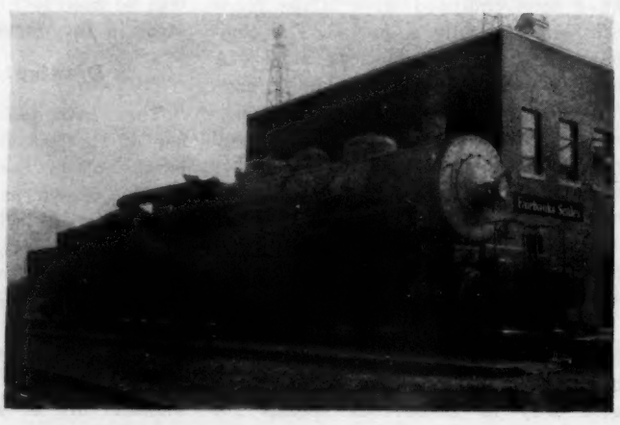
ACHIEVING profit by elimination of losses is a recognized doctrine of industry today. Accurate weighing methods play no small part in loss elimination for a great number of businesses, and these methods have been brought about by improvement in scale design. Quick-reading dial scales which facilitate weighing material correctly and speedily have been developed and modern science and ingenuity have bent every effort to produce scales which embody these principles of speed and accuracy and at the same time eliminate as far as possible the chance for human error in their operation.

Scales of today are made in special designs to fit the particular requirements of every industry. Present manufacturing methods are concerned chiefly with mass production, precision and the elimination of waste both of time and materials. In practically every phase of the production schedule from raw material to finished product the question of accurate weight is important. From the multitude of special weighing machines used in every industry today to the steelyard of ancient times is a far cry. From the earliest days there was no improvement until the dawn of the machine era when in 1830 Thaddeus Fairbanks invented the platform scale from which modern scales are direct descendants. Thus, in 1930 the world celebrates the centennial of modern weighing.

It was in 1815 that Maj. Joseph Fairbanks moved from Brimfield, Mass., to St. Johnsbury, Vt., and set up a grist mill and saw mill on the

FROM an old etching of the first railroad track scale, designed by Thaddeus Fairbanks; capacity was 100,000 pounds, as indicated

MODERN railroad track scales have been built with capacities as high as 1,000,000 pounds, accuracy guaranteed to within 20 pounds



Counting small parts for inventory purposes and in production work now is taken care of by various types of dial counting scales, one of which is shown here

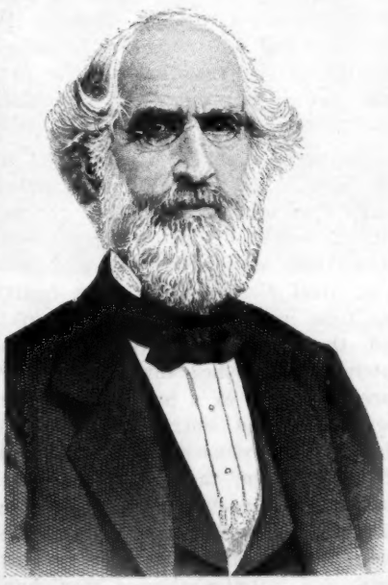
banks of a little creek that ran through this old Vermont town. His sons, Erastus and Thaddeus had even broader visions and established a wheelwright and foundry business and then expanded into manufacturing saws, pitchforks, cast iron plows and stoves; in about 1830 the "hemp craze," as it was called, struck Vermont and the farmers expected to make substantial fortunes in raising hemp instead of corn. Contracts for making hemp dressing machines were awarded to the Fairbanks brothers.

Hemp Weighing Creates Problem

The question now arose—how was the hemp to be weighed? The old steelyard was of little use for this service and so Thaddeus Fairbanks conceived the idea of constructing a large steelyard beam suspended from a high frame with chains to grapple the axle of the cart. An approximate weight was thereby obtained by a slow and laborious process.

After some study the idea was conceived of supporting the platform upon an A-shaped lever with the tip of the lever connected to the steelyard by a rod. From this small beginning the platform scale in all of its ramifications was developed until today the same principle is in use whether in a health scale, a laundry scale or the ponderous ones used for weighing the largest railway locomotives.

One of Thaddeus Fairbanks' first designs was a farm scale consisting simply of some castings with the pivots properly set, a beam and a set of weights. The builder would take these parts with him to where the scale was to be set up; there on the job he would cut timbers about 12 feet long and by fastening these castings to them, set up a complete scale. As there was little shrinkage lengthwise in the wood a serviceable scale was soon made.



Thaddeus Fairbanks, credited with the design and construction of the first platform scale in 1830

These original designs of Thaddeus Fairbanks have had great influence upon scale building the world ever since the first patent was granted. Consider the construction of the familiar portable platform scale which can be seen today in every store and factory. These scales all are built along the same general lines and no changes in general appearance have been made in a hundred years. It is a tribute to the St. Johnsbury inventor that an absolutely new design, made a hundred years ago, should continue unchanged to the present.

Railroad Scale Principle Unchanged

The same is true of the "straight lever" railroad track scale, almost a century old. With one exception all such scales today have been copied from the general arrangement of this scale. Naturally they have been strengthened and improved to keep pace with modern traffic conditions, but the principle remains the same.

The United States patent for the railroad track scale was granted Thaddeus Fairbanks Jan. 13, 1857, he being the first to introduce these scales into the United States. Track scales have been manufactured continuously at the St. Johnsbury plant for nearly 75 years and leading railroads in the United States, as well as in many foreign countries, have adopted them as standard. They are so accurately

adjusted that a scale loaded with 150 tons will readily indicate an addition of 10 pounds on the platform.

Introduced in 1900, type registering beams were an advanced mechanical product that met with a ready sale and still are used extensivey in elevators, rolling mills, refineries, steel plants, railroads, etc. The beam is of the usual pattern but, in addition, the under edge of the beam is provided with a series of type figures corresponding with the weight in graduations. The poise is provided with an internal mechanism so that when the load has been balanced, a ticket is inserted in the slot of the poise and by means of the handle the weight of the load is registered.

Unique Scale Installed in 1911

A track scale with a mechanical hump, installed in 1911, embodied more new features in its design than any constructed in recent years. The unique features were the suspension bearing supporting the platform, the mechanical relieving gear which eliminated the dead rail and the mechanical hump which provided for proper movement of the cars over the scale, practically eliminating the necessity of applying the brakes to the cars while on the scale.

In 1913-14 the plate fulcrum principle in scale construction was applied to railway track scales. This idea had been developed in 1875 and then was patented for use on large capacity scales; it was first used by the inventor, A. H. Emery, in that year on steel testing machines built for the bureau of standards. The principle was given considerable study by scale engineers with the result that finally is was adopted for track scales.

With the advent of the automobile truck which slowly but quite as surely began to displace the horse-drawn wagon and truck, the old type wagon platform scale became inadequate and there was introduced a sturdier weighing machine known as the auto truck scale which found ready acceptance.

Self-indicating or dial machines have been the most recent development in scale making and now are made in capacities from 50 to 40,000 pounds. Leonardo de Vinci, who lived in the fifteenth century, is credited with inventing these scales, drawings of them in his notebooks having been preserved. The pendulum mechanism has proved much more accurate and serviceable than the springs that were once used, while the double pendulum gives the most accurate results. Dial scales and automatic weighing eliminate to a great extent the human element and it may be predicted safely that there will be a great extension of this method of weighing.

The world's largest scale was built recently at the St. Johnsbury factory and is located at the plant of the Hamilton Furnace Co., Hamilton, O. The Hamilton foundry had installed a movable mixer built on railroad trucks and the scale weighs the entire load, the car and its contents. The load mixer weighs 1,000,000 pounds, six times the weight of a loaded coal car. The new scale is an exact duplicate of other scales except for its large proportions, being a standard two-section track scale. Its accuracy is guaranteed to within 20 pounds, 0.002 per cent of reading.

As industries have become specialized so too have scales been designed to meet the particular needs of each industry. The built-in accuracy of the modern scale must be matched with a built-in ability to retain that accuracy under special conditions of operation. Scales now are built in an almost endless variety to meet present day requirements of speed and sustained accuracy.

Forging Practice Aided by Hardening Methods

(*Concluded from Page* 86)

preheating, heating and soaking zones. The correct temperatures and heat gradient throughout these zones are maintained by two recording controllers with thermocouples and motor-operated valves. A 4-foot steel loading table is located at the charging end. An alloy hearth extends through the furnace. A cooling chamber 10 feet long and 3 feet wide is attached directly to the rear end of the furnace and is supported by structural steel members.

The surface of the first 3 feet of the hearth of the cooling chamber consists of alloy steel plates, covered with 2 inches of insulating material while that of the remaining 7 feet is of steel plates. The entire hearth has four longitudinal V-notches in it and the forgings, resting in these notches, are pushed through the furnace by means of a pneumatic pusher located at the entrance. Cast-iron plates are incorporated in both ends of the furnace, the one at the rear supporting a cast-iron flap-type door, suitably counterbalanced. The inlet door, also of cast iron, is of the lift-type and counterbalanced for hand operation. This door is lined with 4½ inches of firebrick and 2½ inches of insulation.

Over and under firing is employed, using the low-pressure system, the burners are connected similarly to the billet heating furnace. The highest temperature used in this furnace is 1650 degrees Fahr. and its capacity is roughly 2200 pounds of forgings hourly.

Large Uses of Steel in Small Ways

(*Concluded from Page* 89)

drawing grade, of No. 20 gage. The first operation is blanking. Then follow three drawings, trimming and flanging, the same as in the case of nonferrous metal. From here on, however, the operations are greatly simplified. After flanging there is a polishing operation, the only one in the various steps of manufacture. Next comes the punching, a washing, and applying of two enamel coats.

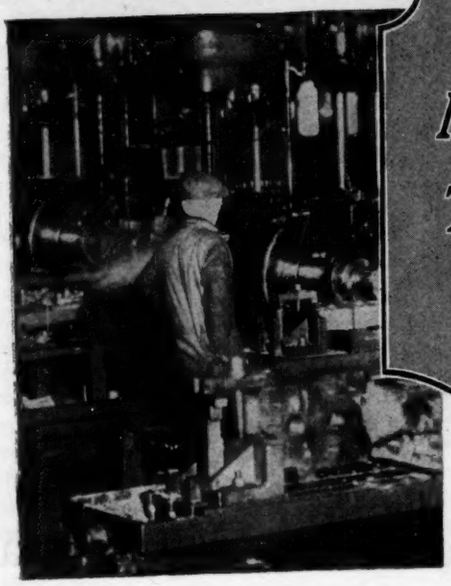
The brackets for both types of lamps are made of steel, enameled, and are riveted on the shell just before the final assembly.

Material for all of the reflectors is nonferrous metal, drawn to shape, punched with a hole to admit the lamp itself, and finally silver plated. Except for truck lamps, all headlamp doors made in this plant also are of nonferrous metal, the doors having a bright finish. The material for the doors is first blanked, then drawn to shape, trimmed, the center punched out, flanged, and then put through the various polishing and plating operations. Aluminum sometimes is used, when the plating, of course, is omitted.

In addition to the various operations as outlined for chromium plating there is a rigid system of inspection immediately following the application of chromium. The inspector holds the shell or the door in a small compartment illuminated with a "daylight" incandescent lamp. Sometimes the chromium does not "take" on certain spots, and there being a difference between the light reflection from a chromium surface and a nickeled surface the spot instantly becomes recognized by contrast. The imperfectly plated shell is then returned to the bath.

Steel is not generally used when it is intended to plate, because it is more difficult to obtain a firm, adherent deposit.

Ford headlamps, including reflectors, weigh approximately three pounds, and the average weight of those for other cars is five pounds. Tail lamps and cowl lamps weigh on the average about one pound each.

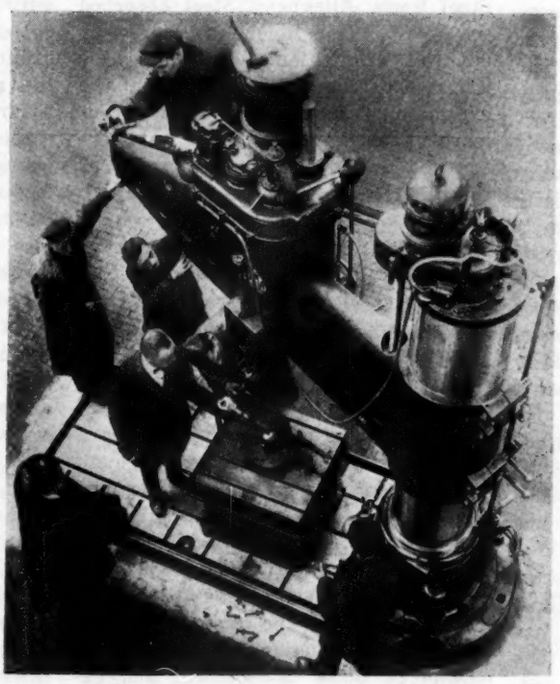


New Machine Tools and Shop Equipment

"Magnified and shaped in steel, here is the final energy, the seed that fertilizes space."
—MacKnight Black

Soviet Needs American Machinery

IT IS becoming recognized generally that a potential market of hundreds of millions of dollars exists for industrial machinery in the construction programs of the new Russia or the Union of the Socialist Soviet Republics. In October, 1928, there was put into effect the so-called 5-year program of industrial expansion, a complete and stupendous industrial upbuilding of a country for centuries of an agricultural caste. Disregarding the political aspects of communism, the American business man cannot fail to see the field which has been opened for the sale of his products when he considers the actual figures on industrial machinery exports to Russia, increasing from $3,705,000 in 1925 to $8,854,000 in 1928 and to the amazing sum of $40,200,000 in 1929. It is virtually assured that the 1930 figure will surpass even this total and by October, 1933 the Soviets propose to have invested in industrial and agricultural development the sum of $32,000,000,000.



Testing an American-built radial drill recently installed in a Soviet plant. The illustration was taken from The U.S.S.R. in Construction, a magazine distributed by the State Publishing house of the Soviet

By the end of the 5-year period the Soviet administration hopes to have doubled coal production over 1928-1929; trebled iron ore production; more than doubled steel production; doubled petroleum production; trebled the capacity for electric power; and to have built up a sizable automobile and tractor industry. As a natural adjunct to this expansion will be an extensive building program involving the construction of workers' apartments, plant buildings, etc. The equipment and maintenance of this great project will require large quantities of all types of machine tools, a fact already realized by the Soviet engineers. At the present time a number of the largest machine tool interests in this country are working on lists of tools for Russia, business which serves as a means to keep up plant operations in the face of the current doldrums of domestic buying. However, many American manufacturers are wary of Russian business, principally because they do not know the situation in the Soviet and are not certain of financing arrangements. They feel there is too much uncertainty clouding the matter. Yet a number of companies are working on large projects in the Soviet and apparently to their complete satisfaction. Among these is the Austin Co., Cleveland, now engaged in erecting an entire industrial city near Nizhni Novogorod, about 273 miles east of Moscow. This city will be designed to house 50,000 workers and will include living and recreation facilities and an automobile plant of sufficient size to build 500,000 cars annually. The cost of the whole transaction will be upward of $50,000,000. W. J. Austin, president of the Austin company, and other officials of the company traveled to Russia and thoroughly investigated the Soviet problems and people before entering into the contract. Mr. Austin's views on the subject are interesting, as expressed in the February issue of *Trade Winds*, published by

(*Concluded on Page* 135)

F.o.b. PITTSBURGH

Pittsburgh Works Keep Identities in Merger Era

* * *

Koppers' Interests Widespread; Weld More Barges

Pittsburgh, March 4

BLAST furnace construction continues its trend toward larger and more efficient units. The Weirton Steel Co. announced recently it would have the largest blast furnace in the world upon completion of work that will increase the capacity of one of its two stacks to a daily rating of 1100 tons. The company's other stack has a daily capacity of 800 tons.

No. 2 furnace of the Carnegie Steel Co. at its Ohio works, Youngstown, O., has a capacity of 1000 tons daily and is the largest of that company, although work now under way at one of the Edgar Thomson units at Braddock, Pa., will bring it up to the rating of the large Ohio furnace. Jones & Laughlin Steel Corp. has two large stacks in addition to three smaller ones at its Aliquippa works. No. 5, blown in Aug. 1, 1927, following repairs and improvements, has averaged slightly more than 1000 tons daily for an entire year, with a record high for one day of 1277 tons.

* * *

ABOUT half of the leading steel producers of the United States have been unaffected by the numerous mergers that have occurred in the industry in the past few years and of this number one-third are located in what usually is considered the Pittsburgh district. The combined ingot capacity of this group is around 6,600,000 tons annually, including that of the Jones & Laughlin Steel Corp., Pittsburgh Steel Co., Pittsburgh Crucible Steel Co., Allegheny Steel Co., Follansbee Bros. Co. and Wheeling Steel Corp. Allegheny Steel absorbed the West Penn Steel Co. last year but this acquisition did not increase its steelmaking capacity. With the exception of Jones & Laughlin, recent merger talk generally has not concerned the independent companies of this district.

Reports of probable mergers of Jones & Laughlin with any one of several of the important producers have been doled out regularly for many years, but the company has continued aloof to expansion via the merger route. The recent placing of George G. Crawford at the head of the company is expected to witness a continuation of the internal growth which, prior to the recent Republic consolidation, alone had brought the Jones & Laughlin organization to the rank of third largest steel producer in the country. An excellent financial condition will aid the company to keep apace with other producers in the matter of plant development and expansion both in this district and in Chicago, where it owns property available for mill construction.

* * *

CONTINUOUS sheet mills have occupied a prominent position in the new processes that have marked the developments in steel rolling over the past several years. The fact that seven important companies have taken licenses under the patents held by the American Rolling Mill Co. attests to the success of this process, although it is equally true that the fears of some sheet producers three years ago that these large production units spelled the obsolescence of the old sheet mills generally have proved groundless. Sheet requirements of the automotive industry have played a large part in the popularity of the continuous mill, but because of its heavy capacity nature it has proved less easily adapted to the production of small lots of various sizes. There also are limitations to the gage and width of the sheet that can be produced that are not experienced by other mills.

Wide sheets have been in increasing demand by the automobile industry for use in building the back section of bodies, and although extras for wide widths currently are high, additional markets are in prospect for these sizes, and several mills for rolling such material have been and are being built. Plans of the Youngstown Sheet & Tube Co. for the construction of a $10,000,000 continuous sheet mill are awaited with interest here due to the fact that it is understood the mill will be designed to roll wider sheets than formerly has been accomplished by the continuous process. The continuous mill of the Weirton Steel Co. rolls sheets up to 48 inches wide, which is about the maximum at present.

* * *

WESTINGHOUSE ELECTRIC & MFG. CO. has employed electric welding in the construction of several buildings at its own plants. An engineering laboratory building, now in the early stages of erection at the main plant at East Pittsburgh, will be

the largest ever built with the use of this process in joining the structure members, it is claimed. It will be an 11-story structure and will duplicate an office building completed a short time ago. The latter, however, was of the riveted type. The laboratory will require 2000 tons of steel.

Welding appears likely to become an important factor in the construction of river craft in the future, according to boat and barge designers. Barge building has become fairly well standardized in recent years following the disappearance about ten years ago of wooden craft in favor of steel in new construction. Prior to 1921 most barges were built of wood, but the hard usage experienced by floating equipment on inland waters eventually gave preference to steel.

* * *

ECONOMY in tonnage of steel required and in amount of labor involved for construction, improved strength, longer life and opportunity for reduced insurance rates on cargo carried, as well as an increase in carrying capacity due to lighter weight of craft are claimed by advocates of the welded barge. Eastern builders of floating equipment have employed welding for some time and to a greater extent than have local companies despite the fact that service at eastern ports is considerably less severe than on inland rivers where lockings are numerous.

A few welded barges were built last year for experimental purposes in the Pittsburgh district and further developments are looked for in the near future. Welding was employed partly by the Riter-Conley Co. These barges are used for the transportation of bulk cement from Cape Girardeau, Mo., to distribution points such as Memphis and St. Louis, where the cargo is piped from the carriers to bins for storage or sacking and further shipment. In order to seal the deck houses and exclude moisture welding was used in their construction.

* * *

THE much-reported acquisition of coal property of the Pittsburgh Coal Co. by the United States Steel Corp. continues to hang fire, although negotiations are understood to have been under way between the two interests for some time. An option held by the Steel corporation on certain coal properties of the Washington Coal & Coke Co. expired and was not renewed. Land of the Pittsburgh company, the purchase of which is under consideration, is said to involve about 30,000 acres of coking coal. A recent rumor also links the Koppers Co. with the Pittsburgh Coal Co. either through control or coal acreage purchase. The Mellons are identified with both companies.

Interests of the Koppers Co. have been broadening steadily in recent years outside the field of by-product coke oven construction and of late have become more firmly intrenched in the public utility industry. The election last month of Henry B. Rust, president, and John S. Brooks Jr., general counsel of the Koppers Co., to the board of directors of the United States Electric Power Co., accompanied by the announcement that Koppers has become one of the most important stockholders, links Koppers with one of the largest utility holding companies in the world. United States Electric Power recently became the controlling factor, jointly with H. M. Byllesby & Co., in the Standard Gas & Electric Co. properties, including the Philadelphia Co., a holding company for electric, gas, steam and transportation utilities in and around Pittsburgh.

* * *

UTILITY holdings of the Koppers Co. through its subsidiary, the Koppers Gas & Coke Co., also are important organizations. Among others these include control of the Brooklyn Borough Gas Co. and the Brooklyn Union Gas Co. of New York. Its associates control the Eastern Gas & Fuel Co. which owns gas companies serving Philadelphia and parts of New England. Last summer the Koppers Gas & Coke Co. acquired an interest in Eastern Gas & Coke Associates, a Massachusetts association organized to own a majority of the common stock of Massachusetts Gas Companies and all of the stocks of Connecticut Coke Co. and the Philadelphia Coke Co. A number of other gas and coke companies in the East and Middle West, in addition to the Alan Wood Steel Co. in the East, are included in the Koppers' holdings. The Massachusetts Gas Companies own coal producing properties in West Virginia and a fleet of vessels. The Koppers Coal Co., another subsidiary, also owns valuable coal lands. With the constant expansion in its affiliation with large coal consuming units, however, it is believed that the Koppers Co. would be interested in a close connection with a large source of fuel supply.

* * *

FREIGHT rate problems again have come to the fore in the steel and coal industries in this district. The lake cargo coal case, which has been fought for more than five years by western Pennsylvania and Ohio operators before the interstate commerce commission and the Supreme Court without satisfaction to the producers, will be reopened in the near future in an attempt to secure more than the 35-cent differential existing between rates on coal shipped from southern fields and from nearby mines to Lake Erie. Loss of the lake coal business has been felt keenly by northern operators. Shipments from this district last season were limited to those by the few companies operating their own upper lake docks.

Steel producers are faced with a possible increase in freight rates on shipments of steel products in less than carload lots from Pittsburgh approximately 100 miles east as the result of a petition of the Trunk Line association, composed of the larger railroads. The proposal is that all less-carload commodity rates on iron and steel products be canceled and instead be placed in a fourth class basis, and would affect eastern and middle western producers.

* * *

ANOTHER rate increase petition of concern to Pittsburgh mills proposes to set up new schedules based upon various new origin groups in the greater Pittsburgh area, centered around such steel centers as Ambridge, Homestead, Donora, Monessen and McKeesport. This move is of particular moment to subsidiary companies of the United States Steel Corp. Mills favor a single origin group comprising the whole district. In its decision of last June in Docket No. 17,000, the interstate commerce commission upheld the practice of grouping rates from definite traffic producing districts so long as they were not discriminatory. This decision, placing iron and steel commodities by carloads in the fifty-rate class for the district east of the Mississippi river and south to Virginia, remains to become operative, and the most recent postponement of its effective date being to May 20.

* * *

INQUIRY regarding river service for movement of iron and steel products is the heaviest in history in this district, according to the manager of one barge line here. Transportation facilities of independent lines were increased last year, but a shortage in equipment is anticipated when the more active second and third quarters arrive. Purchase of additional craft is planned for the current year. A recent survey shows that 95 river boats are available in the Pittsburgh harbor for use of local shippers. This includes a number of packets and passenger boats in addition to the freight and tow boats.

Practically all of the largest steel companies currently are moving steel

products by water. Companies located on the Allegheny river, such as the Allegheny Steel Co. and the Edgewater Steel Co., lack the service that the more navigable Monongahela river affords, but with the further improvement of the Allegheny additional tonnage will be released for down-river shipment.

* * *

THERE is little possibility that the construction of the proposed Lake Erie and Ohio canal project will get under way for several years even if the government attitude is favorable, according to local views. The recent hearing in Washington served to revive recommendations for the construction of competitive routes from Cincinnati and Portsmouth, O. Government approval of rehearings on these plans will defer action on the program proposed by Pittsburgh and Youngstown manufacturers. Youngstown steel producers recently have been moving a large tonnage down the Ohio, using rail facilities from Youngstown to Aliquippa, Pa.

Operators Discuss Merits of Large Furnace Hearths

BLAST furnace and coke oven operators of eastern steel companies participated in the annual midwinter meeting of the Eastern States Blast Furnace and Coke Oven association, Feb. 28 at the William Penn hotel, Pittsburgh. In the blast furnace group discussion centered principally upon the relative merits of various types of hot-metal ladles; a comparison of costs of cleaning blast furnace gas; and suggestions for proper dimensions for the 25-foot hearth blast furnaces. W. A. Haven, vice president, Arthur G. McKee & Co., Cleveland, and president of the association, presided. Results obtained from operation of the new closed top ladle with reference to scrap loss and equipment maintenance were described, including a discussion of the type of lining employed.

The matter of costs of cleaning blast furnace gas, presented by H. E. McDonnell, superintendent of blast furnaces, Weirton Steel Co., was treated by several speakers for the various types of washers and disintegrators in cleaning gas to from 0.4 to 0.02 grains per cubic foot. The subject of recommended dimensions for the 25-foot hearth blast furnace, in addition to providing suggestions of figures for the bosh, lining, bell and height, also occasioned some discussion regarding the relation of height of the stack to flue dust production.

Coke Oven Operators Meet

Coke oven operators in a similar session brought up for consideration the subjects of carbon formation in standpipes; possibilities of reducing the cost of sulphate manufacture; and dehydration of coke oven gas.

A joint meeting of the blast furnace and coke oven groups was held in the afternoon, with Robert McElldowney, superintendent of blast furnaces, Johnstown, Pa., plant, Bethlehem Steel Co., acting as chairman. Subjects for discussion involved coking problems generally having a relation to blast furnace operation. Estimates were given by several speakers of the effect upon pig iron cost of the reduction of each 1 per cent of ash content in coke, including the saving through lower coke and limestone consumption and slag production.

Fuel Preparation Discussed

"Sizing of Coke for Blast Furnace and Domestic Use," introduced by P. J. Morgan, manager, Hanna Furnace Co., Detroit, brought forth considerable discussion regarding the advantages of coal and coke preparation and concerning the most preferable method of employing nut coke in the blast furnace. The prevention of tuyere burning also was touched upon in connection with this subject. The importance of screening both before leaving the coke plant and before being introduced into the blast furnace was emphasized.

The subject of coke quality as related to the width of ovens was brought up by C. R. Meissner, superintendent of coke plant, Weirton Steel Co., Weirton, W. Va., and was followed by a short discussion on oven operation and production obtained in use of ovens with widths of 14 inches and more.

Large blast furnaces again were involved in the last subject, dealing with the relationship between raw materials used and operating results obtained from stacks 24 feet or more in hearth diameter. J. E. Lose, assistant general superintendent, Homestead works, Carnegie Steel Co., Munhall, Pa., in speaking on this question also compared the large and small furnaces with respect to blast pressure, type of coke preferable and the effect of use of inferior raw material.

Steel Founders Forecast Spring Improvement

While the immediate outlook is somewhat unsettled, an acceleration in activity in the steel casting industry in April and May was predicted at the monthly meeting of the Steel Founders Society of America at the Bellevue-Stratford hotel, Philadelphia, Feb. 26-27. Proposed construction work, expected to get under full swing four or five weeks hence, will add considerable impetus, it was believed; moreover, continued good car buying is anticipated, with at least a moderately good year in the machine tool industry. The representative of one large foundry predicted the year's operations at steel casting plants would probably average 75 to 80 per cent. Meanwhile, the situation is spotty, although bookings on the average are fairly good.

The society's next semiannual meeting will be in White Sulphur Springs, W. Va., late in June and the next monthly meeting will be held in St. Louis, March 27.

Organization of an alloy section for manufacturers of heat and corrosion resisting castings was undertaken. Of special interest were indications of the early completion of the society's code of trade practices. Tests on grinding wheel guards have been completed with the data now up for the committee of approval. The society's revised cost system will be reported in about six weeks.

To Publish Directory

Granville P. Rogers, managing director, reported that the society's 1930 directory of steel foundries will be available in about a month and will present figures on production of steel castings by type, namely, alloy, carbon, heat and corrosion resisting castings. The first issue of *The Steel Founder*, the official bulletin of the society, will be published soon.

Discussing merchandising problems, C. Tolan Jr., Dodge Steel Co., Philadelphia, urged manufacturers to talk quality and "to think in terms of selling, not giving." Job costs and job profits, not tonnage is the major consideration, he declared. The speaker also urged an extension of the small group research idea now prevalent. T. S. Quinn, Lebanon Steel Foundry, Lebanon, Pa., outlined factors influencing the design of sand handling equipment in the steel foundry.

Editorials

First Year Not Kind to Hoover

ONE year ago, almost to the day, Herbert Hoover was inaugurated President. Then business was at a high pitch, the stock market was booming, prosperity was rampant and appeared safe in the hands of the first business man to occupy the White House.

Today almost the reverse is true. Business is hesitant, stocks are deflated. unemployment is widespread, wheat is below a dollar, and there is unconcealed lack of harmony between the White House and Capitol Hill.

Inevitably the reputation of the President has suffered, but by no means to the full extent that the country is less happy than a year ago, and less so than congress. No thinking man blames the President for last fall's break in security values. What power could have stabilized the price of wheat in the face of the world surplus? Not even Theodore Roosevelt himself could have whipped the recalcitrant senate into line.

Few presidents has fate treated so cruelly as Mr. Hoover. He took office when business was at the peak of its postwar rise, when federal expenditures had been driven to the minimum, when general unrest and disregard for law were increasing. The bright side of the picture is that the country was fortunate in having a Hoover at the helm in the past year, and this may be increasingly realized.

The tradition of superman, foisted upon the President by his friends, has been a load. The success attending the food administration, the relief of Belgium and the revivifying of the department of commerce were largely possible because Mr. Hoover functioned at the head of a hand-picked corps. In the White House the President must make the best of a congress sent to Washington by the people, and deal with a federal service long intrenched.

Constructively, the President has accomplished much in the past year. Farm relief legislation, tax reduction, congressional reapportionment, an endeavor to alleviate the burden of armaments, settlement of the French debt, establishment of more friendly relations with the Central and South Americas and closer relationships with business and labor are to his credit.

Time may well prove that the Hoover administration was fortunate in having its major difficulties in its early years. Even the loss of the majority in congress in the coming fall election may not prove an insuperable handicap. Three years for constructive, progressive work remain, and the country looks confidently to Mr. Hoover for results.

Tool Sales Show Obsolescence Met

GREATER diversity of demand for machine tools in the western markets, embracing new fields of production, gives promise of a satisfactory sales volume this year despite some adverse factors apparent now. The broadened requirements augur well for the future of the industry.

Electrical equipment, and radio and parts manufacturers, aeronautical interests, and the farm implement and tractor works have been stimulating machine tool output and sales. The western railroads, having curtailed purchases moderately in the past two seasons, may increase their demand for tools to meet greater needs of their machine shops, which in recent years have been under heavy service because of high car loading totals. The aviation industry has not become an important factor, as changes are frequent in airplane and dirigible models.

About 44 per cent of the machine tools in service at the beginning of 1926, it was shown by a survey, had seen more than ten years' service. The majority of these tools must have gone into obsolescence, according to the growth in sales since.

Steel's Stability the Truer Index

STABILITY, or regularity, of employment in the iron and steel industry is a much better indicator of general industrial conditions in the United States than is employment in the automotive industry. For that reason too much emphasis is placed by the casual observer on the fact the automotive industry is operating now at about 55 per cent of capacity.

Steel serves all industries and it is important to bear in mind that the steel industry is operating at 80 per cent. Of course, general prosperity requires that all industries be operating at a high rate, but as for the automotive industry it can be said that it is notoriously irregular in employment. Steel, on the other hand, has been show-

ing remarkable regularity, and that can be accounted for only by a high average for all of those industries consuming iron and steel.

In measuring employment stability the bureau of labor considers the relationship of average monthly employment during the year to the number of employes in the month of maximum employment. If, for instance, during 1927, a particular occupation had a monthly average of 90 employes and the maximum number in any month was 100, then the stability of employment is considered as 90 per cent. The bureau accepts this formula as giving the most reliable, practical index. The averages, then for the two industries in recent years are as follows:

Iron and steel	88.9	88.3	91.2	94.3	93.6	94.2
Automobiles	82.3	78.7	82.0	83.3	80.6	80.8

The complete figures for 1929, not yet available, do not alter the relationship. The bureau in commenting on its researches pointed out the striking degree of regularity of employment in the iron and steel industry, and also said the automotive industry shows the greatest instability of employment of any of the industries analyzed.

The picture portrayed by the detailed figures shows the automotive industry creeping along or rushing forward like a torrent; the steel industry in a steadier sweep. Steel's stability reflects the stability of industrial America.

Clarifying Chrome-Nickel Steels

ONE of the most notable metallurgical advancements of the past two years is the introduction of corrosion-resistant steels. The new alloys are of the chrome-nickel type and are not to be confused with "stainless steels" available for several years. Composition and properties of the two types are distinct, each having its particular field of usefulness. Chrome-nickel steel contains approximately 18 per cent chromium, 8 per cent nickel and up to 0.20 per cent carbon; the typical stainless steel contains from 12 to 14 per cent chromium and 0.28 to 0.38 per cent carbon. The latter is excellent for cutlery, but does not possess the necessary resistance to corrosion that highly alloyed steels do.

The chrome-nickel alloys take a mirror finish which is permanent under atmospheric conditions; and are resistant to a wide variety of chemicals, gases and organic acids, including those from fruits and vegetables. Tensile strength in the soft state is approximately 100,000 pounds per square inch and this is retained at elevated temperatures. Oxidation is resisted at high temperatures. Although the alloy does not lend itself to hardening by heat treatment, the hardness and strength can be increased by cold work. The material can be welded and is available in nearly all forms, is easily workable and can be drawn into wire and piping and deep drawn into a wide range of shapes. Many applications already have been found for the alloy, but its possibilities are enormous and the field probably has been only touched.

These alloys have widely varying chemical compositions depending upon the corrosion resistance required under given conditions. Nevertheless, one general trade name frequently embraces many makes, each of a different composition; one such product is sold under between 20 and 30 names and this has led to considerable confusion. Acceptance of the new chrome-nickel alloys will be more general and more rapid when this confusion has been clarified. Fortunately the first step in this direction has been taken and many manufacturers already have expressed willingness to adopt a simple letter or number system, which suffixed to the general trade name, would indicate composition and specific heat treatments.

Cyclic Stress Speeds Corrosion

DAMAGE by corrosion is accelerated noticeably by alternating stress, stresses as low as 3000 pounds per square inch exerting considerable influence with steels and aluminum alloys. Stress as low as 2000 pounds has appreciable effect and the effect of even lower stress probably could be detected, if experiments could be continued long enough. For corrosion-resisting alloys, stresses far below the corrosion-fatigue limits cause decided net damage, "net damage" being the total damage less the damage which would be caused in the same time by stressless corrosion. D. J. McAdam Jr., metallurgist, United States naval experiment station, Annapolis, Md., reported these observations at the recent meeting of the American Institute of Mining and Metallurgical Engineers and concluded tentatively that any stress cycle, however small the stress range, accelerates corrosion pitting.

The total damage to steels, when corroded with or without cyclic stress, proceeds at a gradually decreasing rate. The total damage to monel metal or corrosion-resistant steels, when corroded with or without cyclic stress, proceeds at a continually accelerated rate. The effect of cycle frequency on net damage differs greatly for different alloys, but for steels, the effect of cycle frequency is great. According to the speaker, corrosion-fatigue limits, as determined by tests at high frequency for short time, are of value in comparing metals in regard to influence of cyclic stress on corrosion. They have no deeper theoretical significance.

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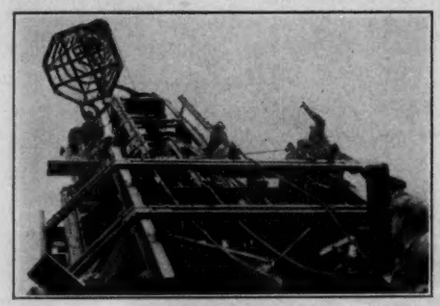

Putting the Cap on One of New York's Sky-scrapers. A Review of Structural Steel Awards, Page 81.

East Retains Lead in Structural Awards

THREE eastern states, New York, New Jersey and Pennsylvania, account for nearly 60 per cent of the country's fabricated structural steel awards in the last half of 1929. New York alone had to its credit 46.19 per cent of the nation's total, a preponderance due to many large industrial and commercial projects. Of the 471,157 tons of fabricated steel awarded in New York state, 430,521 tons was placed in the New York city metropolitan area, including Long Island. The awards in Chicago in the same period amounted to 60,-540 tons. These are a few of the interesting facts from the tenth semiannual survey made by IRON TRADE REVIEW, *set forth in the article beginning on page 81. The figures are based on the weekly compilations in* IRON TRADE REVIEW. *Awards in the last half of 1929 totaled 1,019,875 tons, compared with 993,838 tons in the same period of 1928.*

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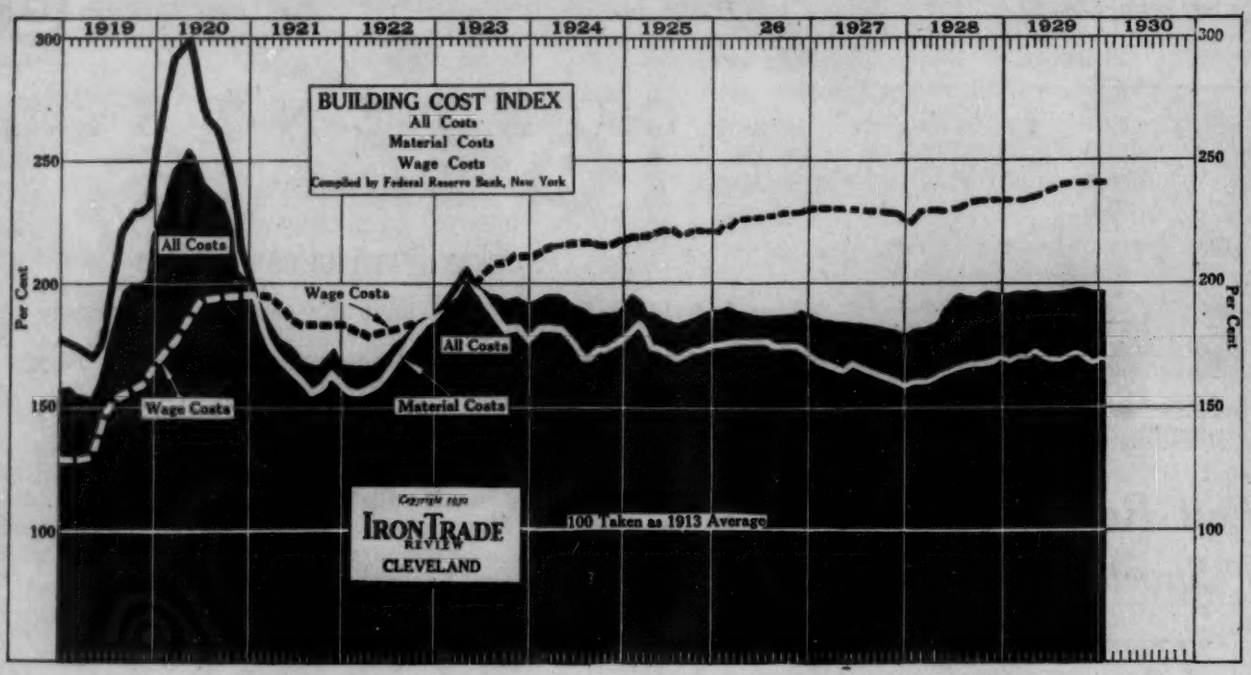
The Business Trend



Building Costs Hold Near Postwar Peak

HOPES for a revival in construction activity have not yet been realized although the near approach of spring promises to give a long-expected impetus to this important industry. Heavy construction and engineering contracts let throughout the country to date this year are more than 40 per cent lower in valuation than in the corresponding period of last year, leading authorities estimate.

BUILDING costs, according to figures compiled by the New York Federal Reserve bank, show little change from the postwar peak reached in 1929. The January index of all costs was 196 against 193 one year ago. The wage cost index is unchanged from the December figure of 242 while the index for materials is unchanged from the December level of 166. The wage index one year ago stood at 233.

ALTHOUGH building cost indexes are unchanged it is probable that workmen are more efficient because jobs are fewer and that use of machinery has cut unit costs somewhat. Sub-contractors also are cutting margins on bids to get work. Financing costs are lower but this factor has not yet stimulated large construction programs greatly.

WITH construction activities lagging and automotive manufacturers taking in sail, railroad requirements have helped to bolster the steel industry. Prevailing caution on all sides, however, is translated in slightly less vigorous steelmaking activity.

ACCELERATED production with which the automotive industry opened in February proved unwarranted by sales. Schedules consequently were trimmed during the latter part of the month. March should test the extent of retail demand and largely determine production rates for the spring months. Automotive activity is scarcely keeping up with the more optimistic expectations of six weeks ago.

BROADLY, the general swing of business is upward with confidence strong in the long-term outlook, although the immediate future continues hedged by numerous uncertainties. Freight car loadings show a contraction in distribution and consumption compared with one year ago, commodity prices are lower, unemployment is widespread and prosperity is uneven. Buying power is reduced but in many cases, on the other hand, it is only conserved. Present conditions continue to favor hand-to-mouth buying policies.

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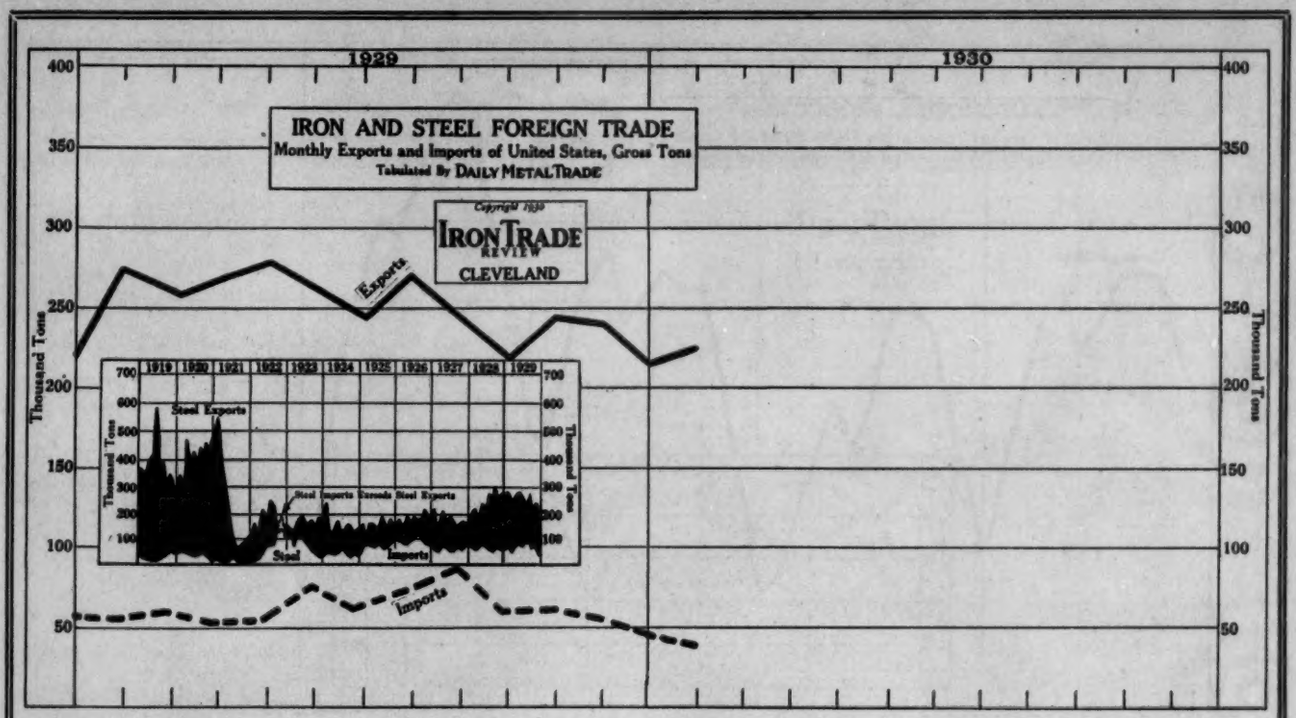
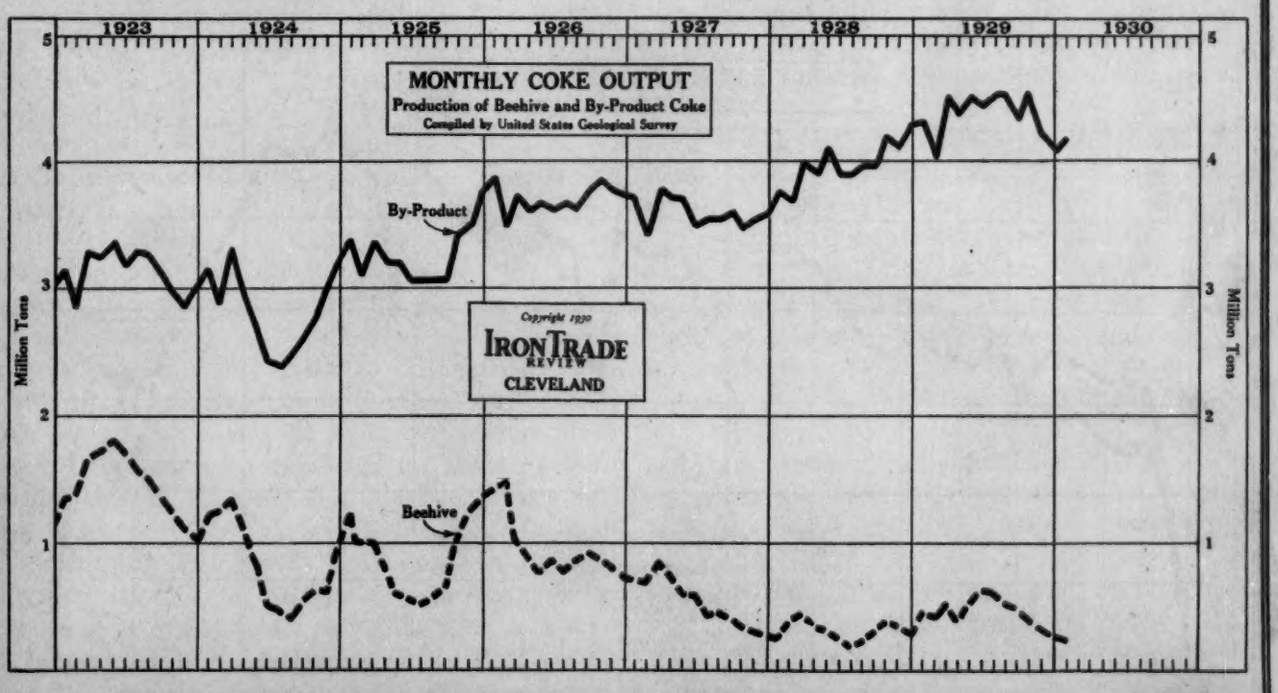


Steel Foreign Trade

JANUARY exports of iron and steel, totaling 225,090 tons, were 18 per cent below those for the corresponding month one year ago at 274,296 tons, according to figures issued by the department of commerce. They were 4.6 per cent higher than the December total of 215,242 tons, however. Imports in January amounted to 42,314 tons against 47,486 tons in December, a drop of 11 per cent. Imports for the first month of 1930 were 20.8 per cent greater than in January, 1929, when they amounted to 54,793 tons.

Coke Production

PRODUCTION of by-product coke in January declined 5.7 per cent compared with January of last year but was slightly higher than in December, according to the bureau of mines. Beehive coke output dropped to the lowest level in months. By-product output for January totaled 4,203,323 tons or 135,591 tons daily, against 4,180,601 tons in December, or 134,858 tons daily and 4,360,194 tons in January, 1929. Beehive output was 309,200 tons in January, against 344,900 tons in December.



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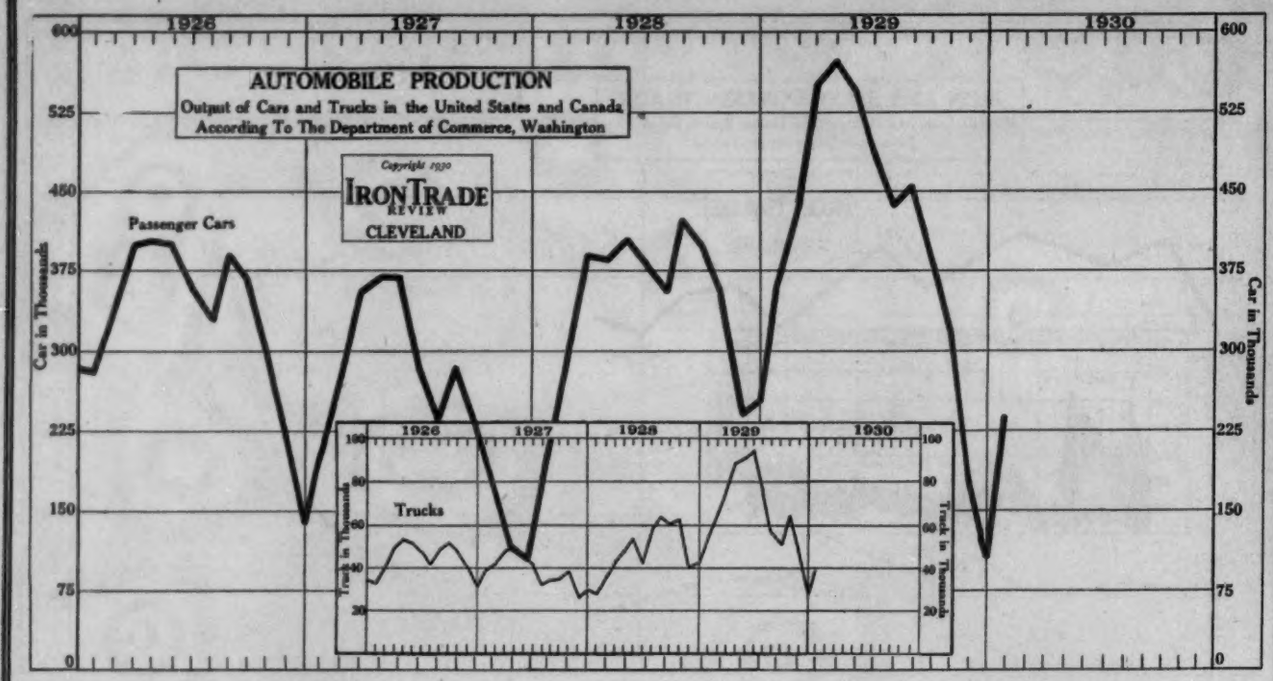
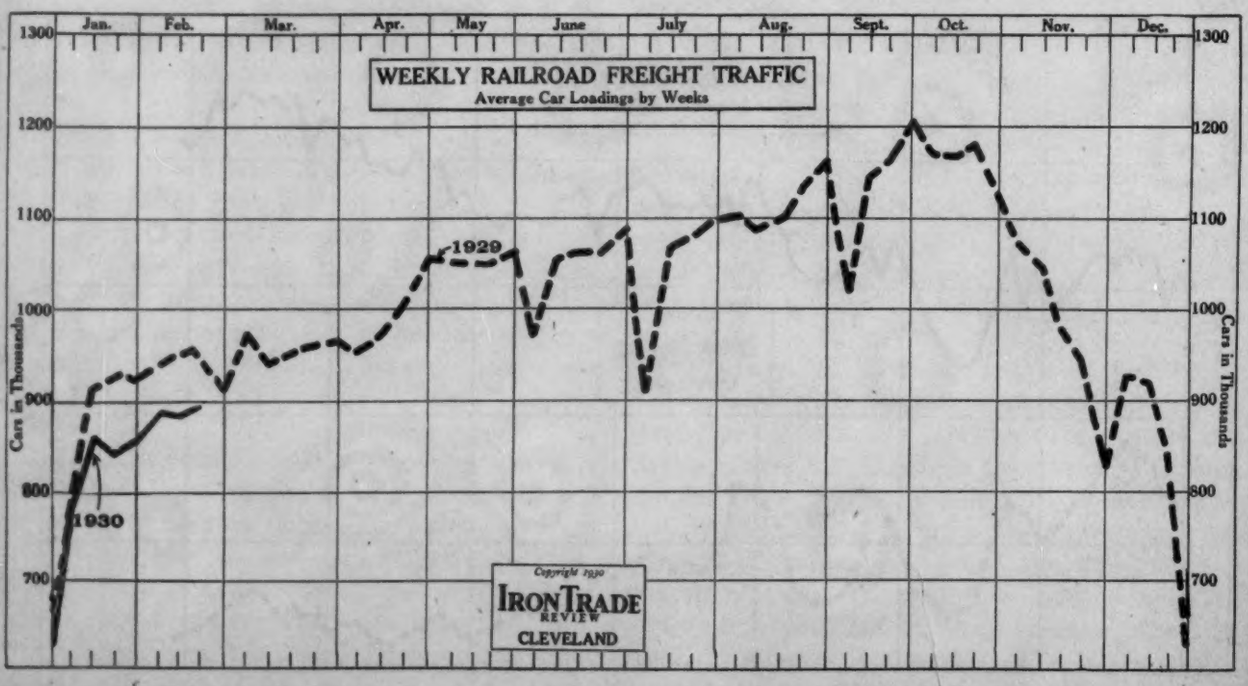


Automobile Production

AUTOMOBILE production was not greatly increased in February, according to estimates, following the 126 per cent upswing in January output of cars and trucks in the United States and Canada compared with the low December record. According to figures issued by the department of commerce, total January output was 283,477 units compared with 125,499 in December and 422,538 in January, 1929. January production of passenger cars increased 143 per cent and truck output 40 per cent.

Freight Car Loadings

REVENUE freight car loadings continue below the levels of one year ago although some seasonal expansion in freight traffic is developing. During the week ended Feb. 15 loadings totaled 891,597 cars, a gain of 5015 compared with those for the previous week and a decline of 65,901 compared with those in the corresponding week last year. It was the second highest weekly total for the current year, however, being exceeded only by the record for the week ended Feb. 1, when loadings amounted to 898,894 cars.



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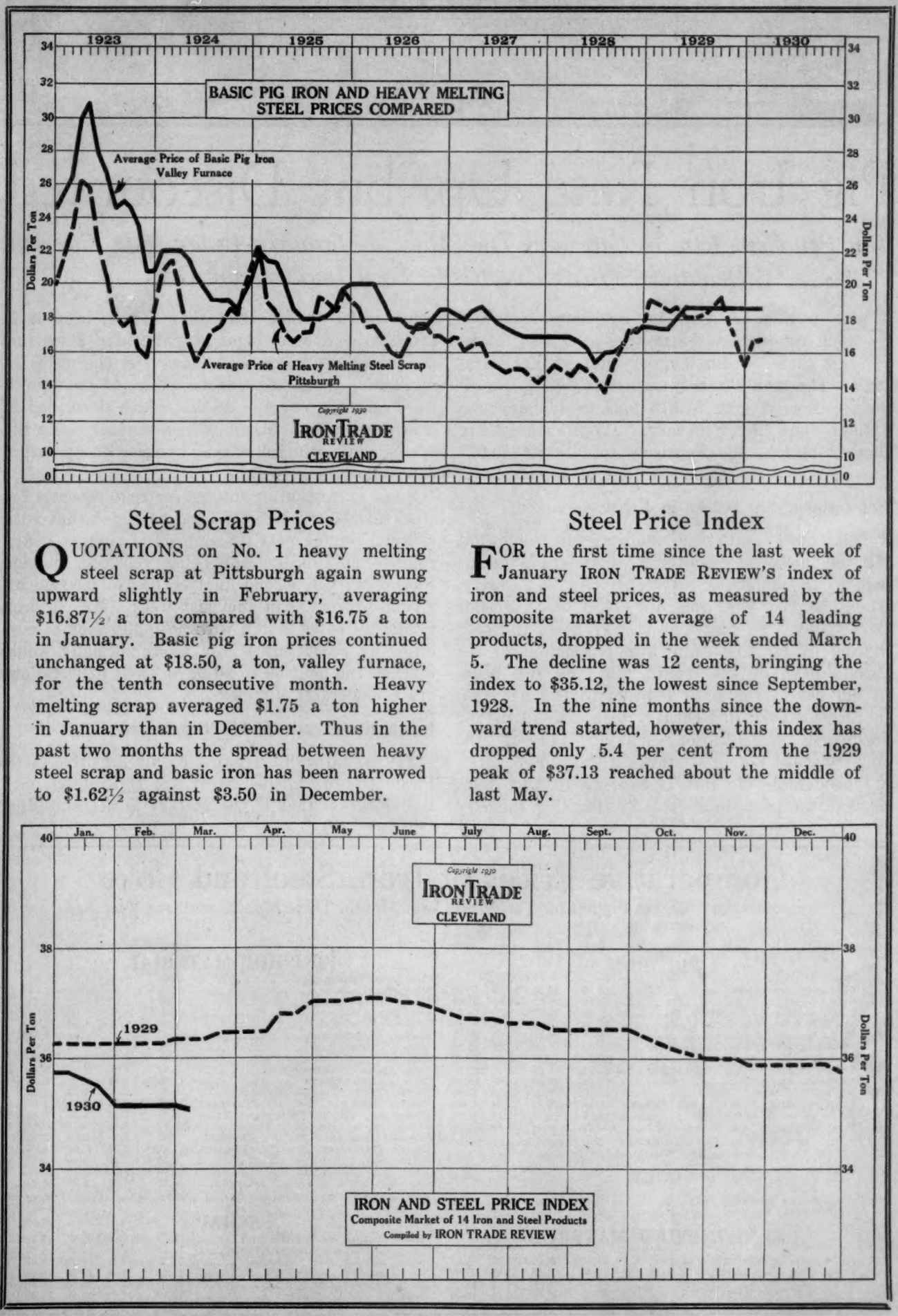


Steel Scrap Prices

QUOTATIONS on No. 1 heavy melting steel scrap at Pittsburgh again swung upward slightly in February, averaging $16.87½ a ton compared with $16.75 a ton in January. Basic pig iron prices continued unchanged at $18.50, a ton, valley furnace, for the tenth consecutive month. Heavy melting scrap averaged $1.75 a ton higher in January than in December. Thus in the past two months the spread between heavy steel scrap and basic iron has been narrowed to $1.62½ against $3.50 in December.

Steel Price Index

FOR the first time since the last week of January IRON TRADE REVIEW'S index of iron and steel prices, as measured by the composite market average of 14 leading products, dropped in the week ended March 5. The decline was 12 cents, bringing the index to $35.12, the lowest since September, 1928. In the nine months since the downward trend started, however, this index has dropped only 5.4 per cent from the 1929 peak of $37.13 reached about the middle of last May.

Pig Iron Rate Up, but Discounted

Ten Per Cent Rise in February Due More to January Bulge than Current Demand—Prices Unsettled—Ford Inquires for Ore

PIG iron production in February increased 10.9 per cent over January, on a daily basis, and came within 2.9 per cent of February, 1929. The month's daily rate was 101,640 gross tons, compared with 91,573 tons in January and 114,942 tons last February. Despite the 3-day shorter month, the February total of 2,845,927 tons exceeded the 2,838,751 tons of January.

Net Gain of Six Stacks in February

This good statistical showing is somewhat vitiated, however, because it is so largely traceable to the bulge in operations late in January, when demand for iron and steel was broader than today. So many of the 17 blast furnaces lighted in January came into production in the closing days of the month that the full benefit did not accrue until February. The net gain in active stacks in February was six, all of the steelworks classification, making 179 of the country's 314 potential stacks in blast Feb. 28.

Considerable pig iron is believed to have been piled in the past fortnight. Steelmaking capacity being more flexible than that of pig iron, it is probable that steel ingot statistics for February, available next week, will show that the gains in production in the first three weeks of the month were tempered by the decline which developed in the fourth week. March, which normally sees the spring upturn in full stride, opens with operating rates continuing to fall.

Some expansion in automotive requirements for steel seems certain by the end of March, but with railroad buying past its zenith and current heavy rollings at Chicago not being replaced, opinion concerning the second quarter has undergone revision downward in the past week. As pig iron producers enter March with no indications of coverage by consumers whose needs normally would quicken the next 60 to 90 days, their expectations are considerably dimmed.

Composite Again Starts Downward

Prices, naturally, are in a highly sensitive state. Producers of finished steel are confronted with the situation that if the market is not stabilized

Comparative Prices of Iron, Steel and Coke

Representative Market Figures for This Week, Last Month, Three Months and One Year Ago

PIG IRON

	March 5, 1930	Feb. 1930	Dec. 1929	March 1929
Bessemer, del. Pittsburgh	$20.76	20.76	20.76	20.11
Basic, valley	18.50	18.50	18.50	17.60
Basic, eastern, del. eastern Pa.	19.00	19.00	19.75	20.25
No. 2 foundry, del. Pittsburgh	19.76	19.76	19.76	19.51
No. 2 foundry, Chicago	19.50	20.00	20.00	20.00
*Southern No. 2, Birmingham	15.00	15.00	14.25	16.00
**No. 2X, Virginia Furnace	18.25	18.25	18.25	21.00
**No. 2X, Eastern del. Philadelphia	21.26	21.26	21.76	22.26
Malleable, valley	19.00	19.00	19.00	18.10
Malleable, Chicago	19.50	20.00	20.00	20.00
Lake Superior, charcoal, del. Chicago	27.04	27.04	27.04	27.04
†Gray forge, del. Pittsburgh	19.13	19.13	19.13	19.11
Ferromanganese, del. Pittsburgh	103.79	104.04	104.79	109.79

*1.75 to 2.25 silicon. For local delivery. Northern shipments based on $13 to $14, Birmingham. **2.25 to 2.75 silicon.

COKE

Connellsville furnace, ovens	2.60	2.60	2.65	2.95
Connellsville foundry, ovens	3.50	3.50	3.50	3.75

SEMIFINISHED MATERIAL

Sheet bars, open-hearth, Youngstown	33.00	33.00	34.00	35.00
Sheet bars, open-hearth, Pittsburgh	33.00	33.00	34.75	35.00
Billets, open-hearth, Pittsburgh	33.00	33.00	34.75	34.00
Wire rods, Pittsburgh	38.00	40.00	40.00	42.00

FINISHED MATERIAL

	March 5, 1930	Feb. 1930	Dec. 1929	March 1929
Steel bars, Pittsburgh	1.85	1.85	1.90	1.90
Steel bars, Chicago	1.95	1.95	2.00	2.05
Steel bars, Philadelphia	2.17	2.17	2.22	2.27
Iron bars, Chicago	1.95	1.95	2.00	2.05
Shapes, Pittsburgh	1.80	1.85	1.90	1.90
Shapes, Philadelphia	1.86	1.86	1.91	2.01
Shapes, Chicago	1.95	1.95	2.00	2.05
Tank plates, Pittsburgh	1.85	1.85	1.90	1.90
Tank plates, Philadelphia	2.00	2.00	2.10	2.10
Tank plates, Chicago	1.95	1.95	2.00	2.05
Sheets, black, No. 24, Pittsburgh	2.65	2.65	2.75	2.85
*Sheets, blue anl., No. 13, Pittsburgh	2.25	2.25	2.35	2.10
Sheets, gal., No. 24, Pittsburgh	3.30	3.30	3.40	3.60
Sheets, black, No. 24, Chicago	2.80	2.80	2.90	3.10
*Sheets, blue anl., No. 13, Chicago	2.50	2.50	2.50	2.35
Sheets, galvanized, No. 24, Chicago	3.45	3.45	3.60	3.85
Plain wire, Pittsburgh	2.40	2.40	2.40	2.50
Wire nails, Pittsburgh	2.25	2.30	2.40	2.65
Tin plate, per base box, Pittsburgh	5.25	5.25	5.35	5.35

*Comparison for February, 1929, is with old blue annealed base, No. 10.

SCRAP

Heavy melting steel, Pittsburgh	16.75	16.90	15.10	18.50
Heavy melting steel, eastern Pa.	14.50	14.50	14.50	16.25
Heavy melting steel, Chicago	13.25	13.25	12.50	15.55
No. 1 wrought, eastern Pa.	15.25	15.25	15.25	16.25
No. 1 wrought, Chicago	13.50	13.70	13.25	16.00
Rails for rolling, Chicago	15.00	14.80	14.60	17.50

Current Prices for Rolled Steel Products

STEEL PLATES

Pittsburgh, base	1.80c to 1.85c
Philadelphia, del.	2.00c to 2.05c
New York, del.	2.075c to 2.125c
Boston, del.	2.165c to 2.265c
Chicago, base	1.95c to 2.00c
Cleveland, delivered	2.04c
Lackawanna, N. Y., base	1.90c to 1.95c
Birmingham, base	2.00c to 2.05c
Coatesville, Pa., base	2.00c to 2.05c
Pacific Coast, c.i.f.	2.30c
St. Louis, del.	2.17c
Detroit, del.	2.14c

STRUCTURAL SHAPES

Pittsburgh, base	1.80c to 1.85c
Philadelphia, del.	1.86c to 1.96c
New York, del.	2.045c to 2.145c
Boston, del.	2.165c to 2.265c
Chicago, base	1.95c to 2.00c
Cleveland, delivered	2.04c
Lackawanna, N. Y.	1.90c to 1.95c
Birmingham, base	2.00c to 2.05c
Bethlehem, Pa., base	2.00c to 2.10c
Pacific Coast, c.i.f.	2.35c
Detroit, del.	2.14c

BARS

SOFT STEEL

Pittsburgh, base	1.80c to 1.90c
Chicago, base	1.95c to 2.00c
Birmingham, base	2.00c to 2.05c
Lackawanna, N. Y., base	1.95c to 2.00c
Pacific Coast, c.i.f.	2.35c
Cleveland base, local mills	1.85c
Cleveland, del., outside mills	1.875c
Philadelphia, del.	2.17c to 2.22c
New York, delivered	2.19c to 2.24c
Boston, delivered	2.165c to 2.265c
Detroit, del.	2.085c
Pittsburgh, cold finishing	1.90c to 2.00c
Pittsburgh, forging quality	2.05c to 2.15c

RAIL STEEL

Chicago Heights	1.85c to 1.90c
Eastern mills	1.85c to 1.95c

IRON

Chicago, base	1.95c
New York, delivered	2.14c
Philadelphia, delivered	2.12c
Pittsburgh, refined	2.75c to 4.25c

REINFORCING

Pittsburgh, billet, cut lengths	2.20c
Stock lengths from mill	1.95c
Chicago, billet, 30 tons and over	2.00c
Under 30 tons	2.40c
Chicago, rail steel	1.75c
Road and bridge work	1.75c to 1.85c
Philadelphia, cut lengths	2.42c to 2.62c

CORROSION, HEAT RESISTANT ALLOYS

Base, Pittsburgh

18 per cent chrome, 8 per cent nickel

Sheets....35.00c; plates....31.00c; bars....28.00c

	A	B	C	D
Bars	19c	20.5c	23c	28c
Plates	22c	23.5c	26c	31c
Sheets	26c	27.5c	30c	35c
Hot strip	19c	20.5c	23c	28c
Cold strip	28c	29.5c	32c	37c

Carbon 0.12 and under; no nickel. A has chrome 15% and under, B over 15/18% inc., C over 18/23% inc., D over 23/30%.

SHEETS

SHEET MILL BLACK, NO. 24

Pittsburgh, base	2.65c
Detroit, delivered	2.84c to 2.94c
Philadelphia, delivered	2.97c to 3.07c
Gary, Indiana Harbor	2.75c to 2.85c
Chicago, delivered	2.80c to 2.90c
Birmingham, base	2.90c
St. Louis, del.	3.07c

TIN MILL BLACK NO. 28

Pittsburgh, base	2.85c to 3.00c
Cary, base	2.95c to 3.05c

GALVANIZED NO. 24

Pittsburgh, base	3.30c
Philadelphia, delivered	3.62c
Gary, Indiana Harbor	3.40c to 3.50c
Chicago, delivered	3.45c to 3.55c
Birmingham, base	3.45c to 3.50c
St. Louis, del.	3.72c

BLUE ANNEALED SHEETS NO. 13

Pittsburgh, base	2.25c
Cnicago, district mills	2.45c
Chicago, delivered	2.50c
St. Louis, delivered	2.57c
Philadelphia, delivered	2.57c
Birmingham	2.45c to 2.50c

BLUE ANNEALED PLATES, NO. 9-10

Pittsburgh, base	2.10c
Chicago district mills	2.30c
Chicago, delivered	2.35c
Philadelphia, delivered	2.42c
St. Louis, delivered	2.42c
Birmingham	2.30c to 2.35c

AUTOMOBILE, NO. 20

Pittsburgh, base	3.90c
Detroit, delivered	4.09c to 4.19c

FURNITURE

Pittsburgh	3.90c to 4.00c

(*Turn to the following page*)

shortly it may continue unsettled through the summer. Some makers have opened books for the second quarter on a basis somewhat higher than the lowest prices now current.

Meanwhile, with consumers indifferent, shading has become more pronounced in some lines and extras are not always observed. Wire rods have sold off $2, at $38, Pittsburgh. Woven wire fencing schedules have been revised, indicating some reductions. Tin mill black sheets have sold at 2.85c, a recession of $1. Further concessions have been made in strip to automotive buyers. Pig iron at Chicago has been lowered 50 cents, to $19.50. Scrap in many districts is 25 cents weaker. It is noteworthy that the IRON TRADE REVIEW composite after being stationary at $35.24 since the last week of January, fell 12 cents this week, to the lowest level since September, 1928.

Gasoline Line Projects Are Large

For a 550-mile gasoline pipe line which the Sun Oil Co. may lay from Marcus Hook, Pa., to Cleveland 100,000 tons of pipe will be required. The Barnsdall Corp. is reported planning an 800-mile gasoline line from the midcontinent oil field to Milwaukee. The Central States Natural Gas Corp. gas line from Texas to Chicago, still pending, will take 200,000 to 250,000 tons of pipe. February freight car awards, totaling 16,928, were the largest since October. Since Jan. 1, 21,884 cars have been bought, compared with 29,140 a year ago and 14,380 two years ago. At present 5000 freight and 250 passenger cars are pending.

Ford Seeks 330,000 Tons of Ore

Ford Motor Co., Detroit, with an inquiry for 330,000 tons, this year as for several years past has opened the Lake Superior iron ore buying season. In 1929 the Ford company inquired for 360,000 tons, buying 340,000 initially and about 20,000 later. In 1928 the company purchased 400,000 tons. On account of increased shipments from its own mines the Ford company's open-market purchases of ore are not an accurate guide to its consumption. Last year Lake Superior ore was advanced 25 cents a ton.

A preponderance of railroad business has enabled Chicago district steelmakers to push their operations up from an 88-90 per cent rate to between 90 and 95 per cent. Pittsburgh this week averages 75 to 80 per cent, contrasted with 78 to 80 last week. Buffalo holds at 74 per cent. Youngstown district makers are off 4 points, to 74 per cent. At Cleveland 24 out of 34 open hearths are on, five fewer than last week. Steel corporation subsidiaries continue unchanged this week at 85-86 per cent, but independents are off 2 points, to 73 per cent. The entire industry this week averages 79 per cent, against 80 last week. Wages in union-ized bar iron mills will be reduced about 25 cents a day during March and April following the bimonthly settlement showing a $1 lower selling price.

Composite Market Average

Based on Pig Iron, Billets, Slabs, Sheet Bars, Wire Rods, Steel Bars, Plates, Structural Shapes, Black, Galvanized and Blue Annealed Sheets, Tin Plate, Wire Nails and Black Pipe

This week (March 5, 1930)	$35.12
Last week (February 26, 1930)	35.24
One Month ago (February, 1930)	35.24
Three months ago (December, 1929)	35.95
One year ago (March, 1929)	36.42
Ten years ago (March, 1920)	65.47
Fifteen years ago (March, 1915)	22.71

Current Rolled Steel Prices

PRICES IN CENTS PER POUND UNLESS OTHERWISE INDICATED

Tubular Products Quoted on Last Editorial Page—See Preceding Page For Other Products

HOOPS, BANDS, STRIPS

Hot strip, to 6-in., Pitts.	1.90c
Delivered Detroit	2.09c to 2.19c
Hot strip 6 1/8 to 24-in., Pitts.	1.80c
Delivered Detroit	1.99c to 2.09c
Hot strip, bands 6 in. and under, Chicago	2.00c
Do. 6 1/8 to 24	1.90c
Cooperage stocks, Pittsburgh	2.10c
Do, Chicago	2.30c
Cold rolled strip, hard coils, 16 inches and under by 0.100-inch and heavier, base Pitts., Cleve. (3 tons and over)	2.65c
Delivered, Detroit	2.785c to 2.885c
Worcester, Mass. (3 tons and over)	2.80c to 2.90c

ALLOY STEEL

Hot Rolled—F.o.b. Mills

Alloy Quality Bar Base is 2.65c

S.A.E. Series Number	Alloy differentials	Net 100 lb. bars
2000	0.25	$2.90
2100	0.55	3.20
2300	1.50	4.15
2500	2.25	4.90
3100	0.55	3.20
3200	1.35	4.00
3300	3.80	6.45
3400	3.20	5.85
4100 0.15-0.25 Mo.	0.50	3.15
4100 0.25-0.40 Mo.	0.70	3.35
4600 0.20-0.30 Mo. 125-1.75 Ni.	1.05	3.70
5100 0.60-0.90 Cr.	0.35	3.00
5100 0.80-1.10 Cr.	0.45	3.10
5100 Chrome Spring	0.20	2.85
6100 Bars	1.20	3.85
6100 Spring Steel	0.95	3.60
Chrome Nickel Vanadium	1.50	4.15
Carbon Vanadium	0.95	3.60
9250 (flats)	0.25	2.90
9250 (rounds, squares)	0.50	3.15

Hot rolled alloy billets 4 x 4-inch and over take same prices per gross ton as same specification alloys bars per net ton. Sizes under 4 x 4 to 2½ in. x 2½ in. inclusive sold on bar basis plus steel bar card extras for size. Sizes under 2½ in. x 2½ in. take bar price on net ton basis.

COLD FINISHED STEEL

Bars, drawn or rolled, Pitts., Chi., Buffalo, and Cleve. c.l.	2.10c
Do, delivered, Detroit	2.335c
Shafting (turned, polished) Pittsburgh, Buffalo	2.10c
Shafting (turned, ground) mill	2.45c to 2.90c
(Depending on size, 1 3/16 to 7-inch)	

WIRE PRODUCTS

F.o.b. Pittsburgh, Cleveland base

(Per 100 pound keg)

(To Merchant Trade)

Standard wire nails	$2.25 to 2.30
Cement coated nails	2.25 to 2.30
Galvanized nails	4.25 to 4.30

(Per pound)

Polished staples	2.70c to 2.75c
Galvanized staples	2.95c to 3.00c
Barbed wire, galvanized	2.90c to 2.95c
Annealed fence wire	2.40c to 2.45c
Galvanized wire	2.85c to 2.90c

Anderson, Ind., $1 higher. Chicago $2 higher, Duluth, Birmingham $3 higher.

Woven wire fencing, retailers, Pittsburgh-Cleveland, net ton $65.

(To Manufacturing Trade)

Bright plain wire, 6 to 9 gage	2.40c
Spring wire	3.40c
Wire, delivered Detroit	2.535c
Nails, delivered Detroit	2.535c

Joliet, DeKalb and Waukegan, Ill., Anderson, Ind., and Chicago prices $1 per ton over Pittsburgh-Cleveland base on products made there; Duluth $2 higher; Fairfield, Ala., $3 higher.

CUT NAILS, CHAIN, PILING

Cut nails, c.l., f.o.b. mills	2.55c
Cut nails, l.c.l., f.o.b. mills	2.65c
Sheet piling, base, Pittsburgh	2.20c

Chain proof BB and BBB, Pitts.

3/16-in. to ½-in.	33 1/3 and 5 off
9/16-in to 1½-in.	33 1/3 off

CAST IRON WATER PIPE

Class B Pipe—Per Net Ton

Six-inch and over, Birming'm	$37.00 to 38.00
Four-inch, Birmingham	41.00 to 42.00
Four-inch, Chicago	49.20 to 50.20
Six-inch to 24-inch, Chicago	45.20 to 46.20
Six-inch and over, New York	38.50 to 40.50
Four-inch, New York	41.50 to 42.50
Standard fittings, Bir. base	$100.00

Six to 24-inch, base; over 24-inch plus $20; 4-inch, plus $10; 3-inch, plus $20; gas pipe fittings, $5 higher.

Class A pipe is $4 higher than Class B.

TIN PLATE; TERNE PLATE

Prices per 100-pound box Pittsburgh

*Tin plate, coke base	$5.25

Gary, Ind., base 10 cents higher.

Long ternes, primes, No. 24	3.90c

*Price subject to quantity differentials.

WASHERS

Wrought, c.l., Pitts. dist.	$6.50 to 6.75 off
Wrought, l.c.l., Chicago dist.	$6.80 to 6.90 off
Wrought, c.l., Chicago	$7.00 to 7.10 off

RAILS, TRACK MATERIAL

Standard bessemer rails, mill	$43.00
Standard open-h'th rails, mill	$43.00
Relay rails, Pitts., 60 to 90 lb.	$25.00 to 29.00
Light rails, 25 to 45, mills	$36.00
Angle bars, Chicago base	2.75c
Spikes, railroad, mills	2.80c
Spikes, small railroad, 7/16-inch and smaller, Pitts.	2.80c
Spikes, boat and barge, Pitts.	3.00c
Spikes, railroad, Chicago	2.80c
Track bolts, Pitts., steam roads	3.80c
Track bolts, Pitts., stand. jobbers	70 off list
Track bolts, Chicago	3.80c
Tie plates, mills	$41.50

BOLTS AND NUTS

Pittsburgh, Cleveland, Birmingham and Chicago

Discounts are for legitimate jobbing or large consuming trade purchasing in full-case lists, apply to lists of April 1, 1927.

Small lots are 55 to 60 per cent off.

CARRIAGE BOLTS

All sizes, cut thread	60 to 70 off

Rolled thread ¾ x 6 and smaller take 10 per cent lower list.

Eagle list	60 to 70 off

MACHINE BOLTS

All sizes, cut thread	60 to 70 off

Rolled thread ¾ x 6 and smaller take 10 per cent lower list.

Lag screws	60 to 70 off
Plow bolts, Nos. 1-2-3-7 heads	60 to 70 off
Tap bolts	60 to 70 off
Blank bolts	60 to 70 off
Stud bolts without nuts	60 to 70 off

Stove bolts, 75, 20, 10 and 5 off in pkgs., 75, 20, 10 and 5 with 2½ off in bulk.

Tire bolts	60-5 off

Nuts

Semifinished	60 to 70 off

HEXAGON CAP SCREWS

Milled	80-10-5 off
Upset 1 in. diam. and smaller	85 off

SQUARE HEAD SET SCREWS

Milled	80-5 off
Upset 1 in. diam. and smaller	80-10-5 off

RIVETS

Struc., c.l., Pitts.-Cleve.	3.10c
Structural, c.l., Chicago	3.20c
**7/16-inch and smaller, Pitts.	70 and 10 off
Chi., Cleve.	70 to 70 and 10 off

**Some makers quoting 70 off with freight allowed on 300 pounds or more.

Raw Materials and Semifinished Products

SEMIFINISHED STEEL

Prices Per Gross Ton

BILLETS AND BLOOMS

4 x 4-inch base

Pittsburgh, open-hearth	$33.00
Pittsburgh, bessemer	33.00
Youngstown	33.00
Cleveland	33.00
Philadelphia	39.30
Chicago	35.00
Forging, Chicago	40.00
Forging, Pittsburgh	38.00
Forging, Philadelphia	44.30

SHEET BARS

Pittsburgh	$33.00
Youngstown	33.00
Cleveland	33.00
Chicago	35.00

SLABS

Pitts., Young.	$33.00
Cleveland	33.00

WIRE RODS

Pittsburgh, Cleveland	$38.00 to 40.00
Chicago	41.00

SKELP

All grades, Pittsburgh	1.85c

IRON ORE

LAKE SUPERIOR ORE

Per Gross Ton, Lower Lake Ports

Old range bessemer, 51½%	$4.80
Mesabi bessemer, 51½%	4.65
Old range nonbessemer, 51½%	4.65
Mesabi nonbessemer, 51½%	4.50
High phosphorus, 51½%	4.40

EASTERN LOCAL ORES

Cents per unit delivered at Eastern Pennsylvania and New Jersey furnaces

Foundry and basic, 56-63%	9.00 to 10.00
Copper-free low phos. 58-65%	nominal

FOREIGN ORE

Cents per units, alongside docks Atlantic ports

Foreign manganiferous ore, 45-55% iron, 10-12% maganese	11.00 to 11.50
North African low phosphorus	12.50
Swedish basic, 65%	9.50 to 10.50
Swedish low phosphorus	12.00
Spanish and North African basic, 50 to 6% (nominal)	11.50 to 12.00
Newfoundland foundry, 55%	9.00
Tungsten future, short ton unit, duty paid	15.00
Chrome ore, 48%, net ton c.i.f.	$22.50

MANGANESE ORE

Prices, not including duty, are cents per unit; cargo lots.

Caucasian (52-55 per cent)	30 to 32 cents
Indian (48-50 per cent)	29 to 32 cents
Brazilian (46-48 per cent)	28 cents

FLUORSPAR

85 and 5 per cent grade

Washed gravel, Kentucky and Illinois mines, per net ton	$18.00
Washed gravel, import duty paid east, tide., gross ton	$19.50 to 20.50

REFRACTORIES

FIRE CLAY BRICK

Per 1000 f.o.b. works

First Quality

Pennsylvania	$43.00 to 46.00
Ohio	43.00 to 46.00
Illinois	43.00 to 46.00
Kentucky	43.00 to 46.00
Missouri	43.00 to 46.00
Maryland	43.00 to 46.00
Georgia and Alabama	40.00 to 45.00

Second Quality

Pennsylvania	35.00 to 38.00
Ohio	35.00 to 38.00
Illinois	35.00 to 38.00
Kentucky	35.00 to 38.00
Missouri	35.00 to 38.00
Maryland	35.00 to 38.00
Georgia and Alabama	30.00 to 35.00

SILICA BRICK

Pennsylvania	43.00
Joliet, Ill., East Chicago, Ind.	52.00
Birmingham	50.00 to 51.00

MAGNESITE BRICK

Per Net Ton

9 x 4½ x 2½	65.00

MAGNESITE

Net Ton Chester, Pa., and Baltimore base

Dead-burned grain magnesite	$40.00
Domes., Chewelah, Wash., base	22.00

CHROME BRICK

Net Ton Chester, Pa., and Baltimore base

9 x 4½ x 2½	$45.00

Pig Iron

Market Moderately Active for Small, Prompt Tonnages—Chicago Furnaces Reduce Price 50 Cents—Low Southern Rates Protested

MANY small orders for early shipment, and few substantial sales for second quarter provide a fair volume of business for furnace interests. A reduction of 50 cents a ton by Chicago furnaces to $19.50, base, is construed more as a means of getting the price into line with previous reductions by lake furnaces farther east than as a new step downward. The lake furnace price in the lower Michigan, northern Indiana and western Ohio districts is $19.50, minimum. Following the reduction of $1 a ton at Buffalo some weeks ago heavy sales have been made in the New England district. Some Cleveland iron has been going at $18 to $18.50 to outside competitive points. Eastern furnaces are protesting against low freight rates on iron from Alabama.

PITTSBURGH, March 4.—Signs of a buying movement in pig iron still are lacking. Consumers are adhering to the practice of ordering small lots. The aggregate of such sales continues at the reduced rate of the past two weeks and makes a poor showing for this period. Shipments held up well during the early part of February but declined in the latter half, the month showing little improvement over January. Inquiry remains light. The American Radiator & Standard Sanitary Corp. is reported to have placed 1000 tons of foundry iron for its Louisville, Ky., plant with a southern producer, but no buying is in immediate prospect for its local plant. Furnaces claim to be adhering closely to prices which have prevailed for the past ten months.

Boston, March 4.—New England melters closed for 12,000 tons of pig iron in the past week, and considerable inquiry still is pending. Mystic Iron Works booked 5000 tons, while the remaining tonnage went to New York state and Alabama furnaces. A Massachusetts valvemaker divided 2000 tons of No. 1X and No. 2X between four producers. A machine builder in the same state ordered 2000 tons of No. 1X and No. 2X from Buffalo and Alabama furnaces. The Rhode Island Malleable Iron Co. placed 500 tons. Melters are taking advantage of low offers. Alabama makers are quoting $12.50, furnace, for No. 2X. Buffalo iron is offered at $16 to $16.50, base, furnace. Furnaces east of Buffalo are meeting these prices. A manufacturer of heating equipment in Massachusetts is delaying action on its inquiry for 5000 to 6000 tons.

New York, March 4.—Pig iron inquiry totals 4000 to 5000 tons, including 1500 tons of No. 2X and No. 1X for a Bridgeport, Conn., consumer and 500 tons of No. 1X for a machine tool builder in this district. Buffalo prices are easier at $16 to $16.50, base, furnace. Southern iron is unchanged at $18 to $18.50, delivered New York docks. Reports of improved pipe business in the South have had a firming influence on southern iron.

Philadelphia, March 4.—The market for pig iron is fairly active, the principal sales comprising steelmaking grades. Basic continues $19, delivered in this district. Copper free, low phosphorus is sold at $24, base, eastern Pennsylvania furnace, minimum. Copper bearing low phosphorus continues $23 to $23.50, base, eastern Pennsylvania furnace. Considerable pipe iron has been sold here recently. Southern foundry iron is an important competitive factor. Eastern Pennsylvania foundry iron continues $20, base, furnace, with occasional concessions.

The Keystone furnace of the Reading Iron Co. was put out of blast as a result of a fire in the engine house.

Eastern furnaces are about to petition the interstate commerce commission to prevent an extension of the reduced rail and water rate of $5.25 from Birmingham, Ala., to Philadelphia dock, which expires March 31. They claim 125,000 to 250,000 tons of pig iron is being brought annually into the Philadelphia district from Alabama, Massachusetts, northern New York and India.

Buffalo, March 4.—Pig iron buying has slowed up. Sales by Buffalo furnaces in the last half of February are estimated at fully 15,000 tons, with no single order for as much as 1000 tons reported. One lot of 1000 tons of foundry iron is wanted by an eastern melter. Prices are steady.

Youngstown, O., March 4.—Buying of pig iron here still is confined to small lots for immediate use. Shipments continue steady and stocks are not growing because furnace operations have been restricted. No. 2 foundry and basic bring $18.50, valley, and bessemer and malleable $19.

Cleveland, March 4.—Sales of pig iron recovered in the past week, those booked by furnace interests with headquarters in Cleveland amounting to 20,000 tons, compared with 14,000 tons the week preceding. Despite this sellers appear less cheerful, largely because a majority of orders are small and for prompt delivery. Even those melters placing tonnage for second quarter are buying conservatively. Though makers have shown a disposition to book orders for that period at present prices, business is disappointing. Furnace companies with stacks east of here have received numerous inquiries from New England, interpreting these as a desire by melters there to cover for second quarter at some of the low quotations made recently. Competition from eastern New York, Massachusetts and southern furnaces is keen. Michigan inquiries are nil and the total from western and southern Ohio and Indiana is well within 5000 tons. Ship-

(*Concluded on Page* 121)

Pig Iron Prices

Per Gross Ton

Bessemer, valley furnace	$19.00
Bessemer, del. Pittsburgh	20.76
Basic, valley furnace	18.50
Basic, Pitts., dist. fur.	19.00
*Basic, del., Pitts.	19.63 to 20.13
Basic, del., eastern Pa.	19.00 to 19.50
Basic, Buff. fur. for local del.	18.00
Malleable, valley furnace	19.00
Malleable, Pitts., dist. fur.	19.50
*Malleable, del. Pittsburgh	20.13 to 20.63
Malleable, Cleve. fur. for local del.	19.00
Malleable, Chicago, furnace	19.50
Malleable, Buff. fur. for local del.	19.00
Malleable, del. eastern Pa.	20.76 to 22.40
Malleable, Granite City fur.	20.00
No. 1 foundry, Chicago furnace	20.00
No. 2X, Eastern del., Phila.	21.76
No. 1X, Buff. fur, for local del.	20.00
No. 2 foundry valley furnace	18.50
No. 2 fdy., Pitts. dist. fur.	19.00
*No. 2 foundry, del. Pittsburgh	19.63 to 20.13
No. 2 plain Buff. fur. for local del.	18.50
No. 2 foundry, Chicago furnace	19.50
No. 2 fdy., Cleve. fur. for local del.	19.00
No. 2 fdy., Granite City	20.00
No. 2 plain, del., Phila.	20.76
No. 2 plain, Virginia furnace	17.75
No. 2 plain, Buffalo, del. Boston	21.41 to 21.91
No. 2, Brooklyn, Buffalo all rail	20.91 to 21.41
No. 2, Newark, Buffalo, all rail	19.28 to 19.78
No. 2 Ala., Bir. base, local del.	15.00
No. 2 Tenn., Bir. base, local del.	15.00
No. 2 Tenn., del. Cincinnati	16.69 to 18.19
No. 2 Alabama del. Cincinnati	16.69 to 18.19
No. 2, Alabama, del. Cleveland	19.51 to 20.51
No. 2 Alabama, del. Chicago	19.51
No. 2 Alabama, del., St. Louis	18.42 to 18.92
No. 2 Ala., Phila., dock dely	18.25 to 19.25
No. 2 Ala., Balt., dock dely	18.00 to 19.00
No. 2 Ala., N. Y., dock dely.	18.50
No. 2 Ala., Boston, dock dely	20.21
No. 2X, Brooklyn, Buffalo all rail	21.41 to 21.91
No. 2X, Newark, Buff. all rail	19.78 to 20.28
No. 2X, eastern, del. Phila.	21.26
No. 2X, Buffalo, fur. for loc. del.	19.00
No. 2X, Buffalo, del. Boston	21.41 to 21.91
No. 2X, Virginia furnace	18.25
Gray forge, Pitts. dist. fur.	18.50
*Gray forge, del. Pittsburgh	19.13 to 19.63
Low phos., standard, valley	27.00
Low phos., standard, Phila.	24.76
Low phos., copper bearing fur.	23.00 to 24.00
Charcoal, Superior, del., Chicago	27.04

*Freight from Pittsburgh district furnace to points in Pittsburgh district 63.00c, 76.00c and $1.13 per ton.

CANADIAN PRICES

No. 1 foundry, del. Toronto	$22.60
No. 1 foundry, del. Montreal	24.00
No. 2 foundry, del. Toronto	22.10
No. 2 foundry, del. Montreal	23.50
Malleable, del. Toronto	22.60
Malleable, del. Montreal	24.00
Basic, del. Montreal	22.50

Silvery iron, Jackson county, O., furnace in per cents: 5—$22; 6—$22 to $23; 7—$23 to $24; 8—$24 to $25; 9—$25 to $26; 10—$27 to $28; 11—$29 to $30; 12—$31 to $32; 13—$33 to $34.

Bessemer ferrosilicon, Jackson county, O., furnaces, in per cents: 10—$30; 11—$32; 12—$34; 13—$36; 14—$38; 15—$41; 16—$43.50; 17—$46.50.

Coke

Beehive Production Further Curtailed—Furnace Grade Steady at $2.60—By-Product Ovens Active

THE market for beehive furnace coke continues quiet, and with production further reduced prices are fairly steady. The output in the Connellsville district now is approximately 32,400 tons weekly, compared with 67,940 tons a year ago. By-product oven capacity in the Chicago and Birmingham districts is nearly fully engaged. Little improvement is noted in foundry demand.

Pittsburgh, March 4.—Demand for all grades of beehive coke moderated slightly in the past week, although prices are quotably unchanged. Blast furnace requirements continue limited and spot buying is steady but light. With production closely adjusted to demands, producers are taking a firm stand at $2.60, minimum. Foundry coke consumption is fairly active but little improvement has been noted over the past month. Prices are steady for ordinary and premium brands. Heating coke continues quiet, with prices holding around $2.10 and $2.15.

Production of coke in the Connellsville region for the week ended Feb. 22 was 32,400 tons, compared with 34,300 tons the preceding week and 67,940 tons for the same period a year ago, according to the *Connellsville Courier*.

Boston, March 4.—Foundries continue conservative in ordering coke. Prices are unchanged.

New York, March 4.—Trading in coke is slow but steady, with prices unchanged. Beehive furnace coke is $2.50 to $2.75, Connellsville, and by-product foundry coke $9 to $9.40, delivered Newark, N. J.; $11, New England, and $9, Philadelphia. By-product furnace coke is steady at $3.50 to $3.75, Connellsville, and $4.85, Latrobe.

Cincinnati, March 4.—Specifications for by-product foundry coke last month were considerably larger than in January, with indications the improvement will be carried into March. Foundry grades are unchanged at $10.05, delivered, Cincinnati.

Chicago, March 4.—Shipping orders for by-product coke give evidence of a fair increase over the February rate. Oven capacity is nearly fully engaged. Prices are unchanged.

St. Louis, March 4.—Shipments of metallurgical coke during the last half of February fell slightly below the first half, but the daily average for the month was larger than in January. Some industries have increased orders, while others have curtailed them. Production in this district during February was at a rate only slightly below that of a year ago, according to preliminary reports. Prices are steady.

Birmingham, Ala., March 4.—Only 181 out of 1390 by-product coke ovens in this district are idle, for repairs. Shipments are to start soon on western orders. Inquiries indicate a fairly good demand through the next quarter. Prices are unchanged.

Coke Prices

Prices Per Net Ton

Beehive Ovens	
Connellsville furnace	$2.60
Connellsville foundry	3.50 to 4.85
New River foundry	6.00
Wise county foundry	4.25 to 5.00
Wise county furnace	3.50 to 4.25
By-Product Foundry	
Newark, N. J., del.	$9.00 to 9.40
Chicago ovens	8.00
New England, del.	11.00
St. Louis, del.	9.00
Birmingham, ovens	5.00
Indianapolis del.	8.25
Ashland, Ky., ov., Connell. basis	6.50
Portsmouth, O., ov., Connell. basis	6.50
Buffalo ovens	8.75
Detroit ovens	9.00
Philadelphia, del.	9.00

Ferroalloys

Market Is Quieter—Larger Shipments Expected This Month

New York, March 4.—Spiegeleisen is unchanged, with domestic, 19 to 21 per cent, holding at $34, furnace, in carload lots, and differentials on larger quantities. Ferromanganese is unchanged at $99, duty paid, tidewater, to users of carloads up to 500 tons annually, with differentials for larger quantities. Sellers of both products anticipate increased specifications this month.

Shipments of special ferroalloys are moving steadily. Most of the alloys are in large large demand because of developments in alloy steel business, and the same is true of nickel. Tungsten ore is weak at $15, a short ton unit, duty paid.

Pittsburgh, March 4.—Demand for ferroalloys is less active, specifications for ferromanganese and spiegeleisen having moderated following a tapering in iron and steel operations. Ferrochrome and ferrovanadium continue to make relatively better showing than ferromanganese, although tonnage involved is smaller than in the latter grade. Ferrotungsten is quiet and the market generally continues around $1.45. Ferrovanadium usually holds at a minimum of $3.15.

The property of wrought iron which is most valuable when the material is to be used for ship rivets or for vital parts of locomotives and railway cars is its ability to endure much longer than steel, although a repeated bending, shock, or vibration steel bar of a given size may bear a heavier straight pull.

Bolts, Nuts, Rivets

Specifications Light and February Total Below January

NUT AND BOLT PRICES, PAGE 106

Pittsburgh, March 4.—Specifications for bolts, nuts and rivets continue slow and February business showed a decrease from January. Structural shops are taking fewer rivets and railroad demand also has moderated. Operations are lower, with the average no higher than 60 per cent. Prices remain steady at 60 to 70 off for bolts and nuts, and 3.10c, Pittsburgh, for large rivets.

Cleveland, March 4.—Orders for nuts and bolts are sufficient to maintain operations about 60 or 65 per cent. Railroads and jobbers are buying, although the latter carry small stocks. The rivet price, 3.10c, Cleveland, has been reaffirmed for second quarter but no contracts have been signed as yet.

Chicago, March 4.—Second quarter contracting is under way at quotations extended from first quarter, on the basis of 60 to 70 off for carriage and machine bolts, and 3.20c, Chicago, for large structural rivets, in carload lots. Due to heavy specifications placed by some consumers in January, including a spurt in some automotive requirements, February specifications fell below January and a year ago.

Philadelphia, March 4.—Chesapeake & Ohio is inquiring for nuts, bolts and related products for second quarter requirements.

Ferroalloy Prices

(In dollars, except Ferrochrome)

*Ferromanganese, 78 to 82 per cent tidewater, duty paid	$99.00
*Ferromanganese del. Pittsburgh	103.79
Spiegeleisen, 19 to 21 per cent, domestic furnace spot†	34.00
*Ferrosilicon, 50 per cent, freight allowed, carloads	83.50
*Do., less carload	88 50
Do., 75 per cent	13.00 to 15.00
Ferrochrome, 66-70 chromium, 4-6 carbon, cts. per lb., con., del.	11.00
Do., for spot delivery	11.50
Ferrotungsten, stand., lb. cont.	1.45
Ferrovanadium, 30-40 per cent, per lb., contained, on analysis	3.15 to 3.65
Ferro-carbon-titanium carload producers' plants, net ton	160.00
Do., one ton to carload	170.00
Ferrophosphorus, per ton, carload 17 to 19 per cent, Rockdale, Tenn., basis (18 per cent)	91.00
Ferrophosphorus, electrolytic, per ton carload, 23-25% f.o.b. Anniston, Ala. (24 per cent)	122.50

†Carloads. Differentials apply to large quantities.

*To users of carloads to 500 tons annually. Differentials apply to users of larger quantities.

Scrap

Weakness Follows Lack of Buying By Consumers—Larger Supplies Released By Weather

MARKED change in sentiment in iron and steel scrap has come about as steel production continues to lag. Prices have weakened in some markets and former strength has melted before slack buying and larger receipts of country scrap as weather conditions have moderated. Tonnage buying is almost absent.

Chicago, March 4.—Advancing prices of iron and steel scrap have been arrested, due chiefly to a sale of heavy melting steel tonnage at $13.75, a drop of 25 cents. The general price trend is strong, except in a few individual items, such as cast borings, which also have dropped slightly. On the other hand, a tonnage of hydraulic compressed sheets has sold as high as $13, an advance of 50 cents. The activity of short interests, and prospects of more liberal offerings from industrial and railroad sources, has tended to offset the upward swing. Moderate weather has helped to release scrap from Wisconsin, Minnesota and other territories from which country scrap is drawn. No railroad lists will be out before a week, but indications are that tonnages will be heavier. Several grades, including iron and steel angle bars, iron and rolled steel car wheels, electric furnace turnings and some other material has been sold at 25 to 50 cents below the levels of several days ago. Dealer trading is on a slightly lower level.

Boston, March 4.—A quieter period has developed in scrap materials in the past few days. Such new business

Iron and Steel Scrap Prices

Corrected to Tuesday noon. Gross tons delivered to consumers, except where otherwise stated.

Steel Works Scrap

HEAVY MELTING STEEL

Birmingham	10.50 to 13.00
Boston, dealers	10.30 to 10.60
Buffalo, No. 1	14.00 to 15.50
Buffalo, No. 2	12.50 to 13.00
Chicago	13.25 to 13.75
Cincinnati, deal.	12.25 to 12.75
Cleveland, No. 1	13.75 to 14.25
Cleveland, No. 2	13.00 to 13.50
Detroit, No. 1 deal.	12.00 to 12.25
Detroit, No. 2 deal.	10.50 to 11.00
East Pa., del. mill	15.00 to 15.50
N. Y. deal R. R.	11.50
N. Y., deal. yd.	8.00 to 8.50
Pittsburgh, No. 1	16.50 to 17.00
St. Louis, No. 1 sel.	13.50 to 13.75
Federal, Ill.	12.75 to 13.00
Granite City, Ill.	11.75 to 12.00
Valleys, No. 1	16.00 to 16.50

COMPRESSED SHEETS

Buffalo, (dealers)	12.50 to 13.00
Chicago	12.50 to 13.00
Cleveland	12.75 to 13.25
Detroit, dealers	11.50 to 12.00
E. Pa. new mat	13.50 to 14.00
Pittsburgh	16.00 to 16.50
Valleys	15.50 to 16.00

BUNDLED SHEETS

Buffalo	9.50 to 10.00
Cincinnati, deal.	10.25 to 10.75
Cleveland	10.75 to 11.25
Eastern Pa.	11.50 to 12.00
Pittsburgh	14.00 to 14.50
St. Louis	9.00 to 9.50

SHEET CLIPPINGS LOOSE

Chicago	7.50 to 8.00
Cincinnati	8.00 to 8.50
Detroit, dealers	9.00 to 9.50
St. Louis	9.00 to 9.50

STEEL RAILS, SHORT

Birmingham	11.00 to 12.00
Boston, dealers	9.00 to 10.25
Buffalo	18.25 to 18.75
Chicago (3 feet)	17.00 to 17.50
Chicago (2 ft.)	18.00 to 18.50
Cincinnati, deal.	17.75 to 18.25
Detroit, dealers	16.00 to 16.50
Pittsburgh, (open-hearth, 3 ft. and less)	20.50 to 21.00
St. Louis	17.50 to 18.00

STOVE PLATE

Birmingham	10.00 to 11.00
Boston consumers	11.00 to 11.50
Buffalo	12.75 to 13.00
Chicago, net	11.00 to 11.50
Cinn., deal., net	8.75 to 9.25
Detroit, net, deal.	9.00 to 9.50
Eastern Pa.	11.50 to 12.00
N. Y., deal., mill	7.75 to 8.25
St. Louis	11.50 to 12.00

COUPLERS, SPRINGS

Buffalo	18.25 to 18.75
Chicago	16.00 to 16.50
Eastern Pa.	19.50 to 20.00
Pittsburgh	21.00 to 21.50
St. Louis	14.50 to 15.00

ANGLE BARS—STEEL

Chicago	15.50 to 16.00
St. Louis	13.75 to 14.25

LOW PHOSPHORUS

Buffalo, billets and bloom crops	18.50 to 19.00
Cleve. billet and bloom crops	17.50 to 18.00
Eastern Pa.	20.00 to 21.00
Pitts. billet and bloom crops	21.50 to 22.00
Pitts. sheet bar crops	21.00 to 21.50

FROGS, SWITCHES, GUARDS

Chicago	14.00 to 14.50
St. Louis	13.75 to 14.25

SHOVELING STEEL

Chicago	13.25 to 13.75
Cleveland	11.25 to 11.75
St. Louis	12.50 to 13.00

Iron Mill Scrap

RAILROAD WROUGHT

Birmingham	10.00 to 11.00
Boston, dealers	10.50 to 11.00
Buffalo, No. 1	11.50 to 12.00
Buffalo, No. 2	14.00 to 14.50
Chicago, No. 1	13.50 to 14.00
Chicago, No. 2	13.25 to 13.75
Cincinnati, No. 2	12.25 to 12.75
Eastern Pa.	15.00 to 15.50
N. Y., No. 1 deal.	11.75 to 12.00
Pittsburgh, No. 2	16.50 to 17.00
St. Louis, No. 1	12.25 to 12.75
St. Louis, No. 2	12.50 to 13.00

SPECIFICATION PIPE

Boston	9.00 to 9.25
Eastern Pa.	13.75 to 14.00
New York, deal.	9.25 to 9.75

BUSHELING

Buffalo, No. 1	12.75 to 13.25
Chicago, No. 1	11.50 to 12.00
Cinn., No. 1 deal.	10.00 to 10.50
Cinn., No. 2	6.50 to 7.00
Cleveland, No. 2	10.00 to 10.50
Detroit, No. 1 new deal	11.00 to 11.50
St. Louis, No. 1	9.50 to 10.00
Valleys, new No. 1	15.00 to 15.50

MACHINE SHOP TURNINGS

Birmingham	7.00 to 8.00
Boston, dealers	6.50 to 7.00
Buffalo	9.25 to 9.75
Chicago	7.50 to 8.00
Cincinnati, deal.	8.00 to 8.50
Cleveland	10.00 to 10.50
Detroit	7.50 to 8.00
Eastern Pa.	11.00
New York, deal.	7.00 to 7.50
Pittsburgh	11.00 to 11.50
St. Louis	6.75 to 7.25
Valleys	11.25 to 11.75

MIXED BORINGS, TURNINGS
For blast furnace use

Boston, dealers	5.50 to 6.00
Buffalo	11.25 to 11.75
Cincinnati, deal.	9.00 to 9.50
Cleveland	10.50 to 11.00
Detroit, dealers	8.50 to 9.00
Eastern Pa.	11.00
New York, deal.	7.00 to 7.50
Pittsburgh	11.50 to 12.00

CAST IRON BORINGS

Birmingham, chem.	12.00 to 13.00
Birmingham, plain	7.00 to 8.00
Boston, chem.	8.50 to 9.00
Boston, dealers	6.25 to 6.60
Buffalo	11.25 to 11.75
Chicago	10.00 to 10.50
Cincinnati, deal.	9.00 to 9.50
Cleveland	10.50 to 11.00
Detroit, dealers	8.50 to 9.00
Eastern Pa.	11.25
Eastern Pa., chem.	14.00 to 14.50
New York, deal.	7.00 to 7.50
Pittsburgh	11.50 to 12.00
St. Louis	9.50 to 9.75

PIPE AND FLUES

Cincinnati, deal.	9.00 to 9.50

RAILROAD GRATE BARS

Buffalo	11.00 to 11.50
Chicago, net	11.50 to 12.00
Cincinnati	9.50 to 10.00
Eastern Pa.	11.50 to 12.00
New York, deal.	7.75 to 8.25
St. Louis	11.50 to 12.00

FORGE FLASHINGS

Boston, dealers	9.00 to 9.25
Buffalo	12.50 to 12.75
Cleve. over 10 in.	11.25 to 11.75
Detroit	11.00 to 11.50

FORGE SCRAP

Boston, dealers	8.50 to 9.00
Chicago	17.50 to 18.00
Eastern Pa.	13.50 to 14.00

ARCH BARS AND TRANSOMS

Chicago, net	17.75 to 18.25
St. Louis	21.00 to 21.50

Iron, Steel Works Scrap

AXLE TURNINGS

Boston, deal.	6.75 to 7.00
Buffalo	13.50 to 14.00
Chicago steelworks	10.75 to 11.25
Cleveland	12.00 to 12.50
Eastern Pa.	13.50
Pittsburgh	14.00 to 14.50
St. Louis	10.00 to 10.50

STEEL CAR AXLES

Birmingham	14.00 to 15.00
Boston, ship point	16.00 to 17.00
Buffalo	17.50 to 18.00
Chicago	18.50 to 19.05
Eastern Pa.	20.00 to 21.00
Pittsburgh	20.50 to 21.00
St. Louis	19.50 to 20.00

SHAFTING

Boston, ship point	14.50 to 15.50
Chicago	16.25 to 16.80
Eastern Pa.	19.00
New York, deal.	14.00 to 14.50
St. Louis	18.00 to 18.50

Iron Foundry Scrap

CAR WHEELS

Birmingham, iron	10.00 to 11.00
Boston, iron	14.00 to 14.50
Buffalo, iron	13.25 to 13.75
Buffalo, steel	18.00 to 18.50
Chicago, iron	14.50 to 15.00
Chi., rolled steel	18.00 to 18.50
Cincinnati	12.00 to 12.50
N. Y., iron, deal.	10.50 to 11.00
Pittsburgh, iron	14.50 to 15.00
Pittsburgh, steel	21.00 to 21.50
St. Louis, iron	14.50 to 15.00
St. Louis, steel	15.75 to 16.25

NO. 1 CAST SCRAP

Birmingham, cup.	10.00 to 11.00
Buffalo	14.50 to 15.00
Boston, textile	13.00 to 14.00
Chicago, mach.	15.70 to 16.25
Chicago, railroad	15.10 to 15.70
Chicago, agri.	13.15 to 13.70
Cincinnati, mach. cupolas, gross	18.25 to 18.75
Cleveland, cupola	15.00 to 15.50
Detroit, net, deal.	11.25 to 11.75
East Pa. cupola	15.50 to 16.00
N. Y. cup. deal.	10.85
N. Y., del. local foundries	15.00
Pittsburgh, cupola	14.50 to 15.00
San Fran., del.	13.50 to 14.00
Seattle	14.50 to 14.75
St. L. No. 1 mach.	14.50 to 15.00
St. Louis, No. 1	13.50 to 14.00

HEAVY CAST

Boston	10.50 to 11.00
Buffalo, breakable	10.50 to 11.00
Cleve., breakable	11.25 to 11.75
Detroit, auto, net dealers	12.50 to 13.50
Detroit, break. deal	9.50
Eastern Pa.	14.00 to 14.50
New York, deal.	9.75 to 10.50
Pittsburgh	12.00 to 12.50

MALLEABLE

Boston, railroad	16.50 to 17.00
Buffalo	17.00 to 17.50
Chicago, agri.	14.75 to 15.25
Chicago, railroad	17.00 to 17.50
Cinn., R. R. deal.	15.25 to 15.75
Cinn., agri., deal.	14.25 to 14.75
Cleveland, rail	17.50 to 18.00
Detroit auto deal.	15.00 to 15.50
St. Louis, rail	14.75 to 15.25

Miscellaneous Scrap

RAILS FOR ROLLING

5 feet and over

Birmingham	13.00 to 14.00
Boston	11.50 to 12.00
Buffalo	14.00 to 14.50
Chicago	15.00 to 15.50
Eastern Pa.	15.00
New York	10.50 to 11.00
St. Louis	14.25 to 14.75

LOCOMOTIVE TIRES

Chicago, cut	18.00 to 18.50
St. Louis, No. 1	14.50 to 15.00

LOW PHOS. PUNCHINGS

Chicago	16.00 to 16.50
Pittsburgh	18.50 to 19.50

as has made its appearance consists of carlots. Prices generally continue in a narrow range.

New York, March 4.—Although Worth Steel Co., Claymont, Del., has purchased in the past week a relatively small tonnage at $15, delivered, this price is being paid in the local dealers' buying market for No. 1 railroad steel for delivery to eastern Pennsylvania. In fact, the dealers' market is now holding generally at $11.50, New York. Dealers are paying $11.75 to $12, New York, for No. 1 railroad wrought, a slight downward revision, and $8.50 to $9, New York, for foundry stove plate, a slight upward revision. Both mill and foundry grades of stove plate are scarce.

Pittsburgh, March 4.—Activity in iron and steel scrap is uneven, though heavy melting steel is in better demand. Sales of this grade have been made at $16.75 to $17 but buying fails to broaden and easier steel activity affects the situation. Supplies are light, with dealer stocks low and railroad offerings smaller, though the Pennsylvania list of 47,700 tons includes 8000 tons of heavy melting. Blast furnace grades are dull and compressed sheets are quiet, with no new buying.

Buffalo, March 4.—Reports of a tonnage purchase of No. 1 heavy melting steel by Bethlehem for delivery at Lackawanna are current here but lack official confirmation. The price mentioned ranges from $14 to $14.50. Some dealers say it would be impossible to cover tonnage at less than $14.50, in spite of the weakness which has developed here the past few days following rejection of scrap at Weirton, W. Va., and reduced offers there.

Cleveland, March 4.—Iron and steel scrap is easier with principal grades averaging 25 cents a ton lower. Demand from consuming interests has tapered with reduced steel operations. Supplies are plentiful. Both No. 1 and No. 2 steel are off 25 cents, now being quoted $13.75 to $14.25 and $13 to $13.50, respectively. Borings and short turnings are off a similar amount to $10.50 to $11. Machine shop turnings are quoted $10 to $10.50 and heavy breakable cast $11.25 to $11.75, both down 25 cents. Other grades are quiet and unchanged

Cincinnati, March 4.—Brokers in iron and steel scrap here are quoting 25 cents lower on heavy melting steel and No. 2 railroad wrought, contradicting the apparent trend recently when railroad lists brought substantially better prices. Other grades are nominally unchanged.

Detroit, March 4.—Prices of iron and steel scrap are weaker and declines of about 25 cents per ton have been registered. New auto cast scrap is somewhat stronger and has advanced 50 cents per ton. Further general decline is expected as elements of strength are lacking.

St. Louis, March 4.—The flow of iron and steel scrap has increased somewhat, but with material being readily assimilated, prices are holding steady, with some grades still exhibiting firmness.

Steel specialties and heavy melting steel are holding their own, and malleable is decidedly strong. Cast scrap is in better demand, chiefly from implement and tractor manufacturers.

Canadian Scrap

Dealers' Buying Prices

MONTREAL

Per Gross Ton

Iron axles	$19.00
Steel axles	17.00
Car wheels	14.50
Stove plate	12.00
Wrought pipe	6.00
Turnings	6.50
Heavy melting steel	8.00

TORONTO

Steel axles	14.00
Iron axles	16.50
Heavy melting steel	9.00
Turnings	7.00
No. 1 mach. cast (net)	15.00
Malleable (net)	11.50

Philadelphia, March 4.—Three recent purchases of heavy melting steel feature the iron and steel scrap market. One was at $15, delivered, one at $15.50, delivered and the third at $15.25, delivered. These prices compare with $14.50, the last preceding consumer purchase.

Toronto, Ont., March 4.—A fairly large tonnage of No. 1 machinery cast was placed during the week by Ontario and Quebec consumers. Other business of a substantial nature is pending. The market shows more activity, and new business is developing in larger tonnages. Mills are also buying heavy melting steel and turnings, but individual orders are confined to small tonnages. Iron scrap materials continue the most active feature. Prices are unchanged.

Semifinished Steel

Market Is Quiet—Wire Rods Now Are $38—Shipments Lower

SEMIFINISHED STEEL PRICES, PAGE 106

Pittsburgh, March 4.—Semifinished steel demand shows no improvement over the light activity of the past month. Specifications show only a slight increase since a month ago while new business holds to its former volume. New buying is confined to occasional small lots on which prices are reported as firmly held at $33 for rerolling billets, sheet bars and slabs, and $38 for forging billets. Wire rods, however, are off $2 at $38 although new buying has been restricted.

Philadelphia, March 4.—Billet prices here continue $34, base, Pittsburgh, for standard rerollers, and $39 for forging quality. The market is quiet.

Youngstown, O., March 4.—Shipments of billets and sheet bars have tapered off. Five fewer independent open hearths are operating this week, but bessemer operations are unchanged at 70 per cent. Inquiries for second quarter are expected in the next week. Billets, slabs and sheet bars are $33, Pittsburgh and Youngstown.

Cleveland, March 4.—Shipments of semifinished steel have slowed up, due mainly to continued absence of the automotive industry from the finished steel market. After operating 13 of its 14 open hearths continuously for six weeks the leading merchant producer here has dropped to ten. Consumers show little interest in second quarter and books have not been opened for that period. Shipments continue to be made at $33, base, Cleveland and Youngstown, for sheet bars, billets and slabs.

Chicago, March 4.—Increased orders have been received for forging slabs and billets from makers of automotive parts. This tonnage may be a forerunner of heavier finished steel buying for some automotive plants. Shipments are much deferred on semifinished steel because of the demand from the finishing mills in this district. Sheet bars and billets, 4 x 4-inch base, are being quoted nominally at $35, Chicago. Wire rods are $41, Chicago.

Operating Rates

Cleveland, Youngstown Drop—Chicago High—Others Are Holding

Pittsburgh—Ingot production is unchanged at 75 to 80 per cent, although the average tends toward the lower figure. Schedules of sheet and strip mills are lower, with the former at 65 to 70, and strip at 55 to 60. Tin plate schedules are higher at 75 to 80, with pipe mills unchanged at 40.

Chicago—Heavier specifications have stepped up finishing mill operations during the week and steelworks output is estimated at between 90 and 95 per cent. Blast furnace rate is unchanged with 26 of the 36 stacks in blast. Rail mills are practically at capacity, and sheet mills are maintaining the 75 to 80 per cent rate recently established.

Cleveland—Open-hearth operating rate has slumped with five fewer furnaces going than last week, making 24 out of 34 producing. Blast furnace rates are unchanged. Indications are that open-hearth operations may revert to recent levels when repairs are completed to some furnaces which are temporarily closed for that reason. The leading interest has 10 of 13 open hearths on, a drop of three.

Youngstown, O.—Curtailment in auto makers' buying has brought steel operations down to 70 per cent for the week. Steel corporation steel production is reported at between 65 and 70. Independents are operating 33 of their 51 open-hearth furnaces. Bessemer output is about 70 per cent. Active sheet mills will drop from 93 to 77 during the week. Strip will be at 65 per cent. Independent tin mills are scheduled at capacity, although the Corporation output is about 70. All bar mills are the same at 75, and pipe at 60 is up slightly.

Buffalo—Steelworks operations continue at 74 per cent this week, maintaining the high rate for 1930 established last week. Steelworks outside the city are at about 75 to 80, the average being held down by smaller production in plants within the city.

Bars

Better Buying Puts Deliveries Further Back—Prices Hold for Second Quarter Books

USERS of soft steel bars have developed little interest in requirements for second quarter and current quotations apply on that delivery. Most buying is for immediate needs, closely adjusted to the consuming rate. Two to three weeks delivery is the usual period now being named for ordinary specifications. At Chicago more users are classed as preferred.

BAR PRICES, PAGE 105

Chicago, March 4.—Drop forgers serving the automotive parts industry, with heavier schedules for March, are increasing specifications for forging bar and billet stock, track accessory requirements continue heavy, and implement and tractor buyers are holding their own. As a result, general bar mill and heavy finished specifications have picked up. Uncertainty on the part of several miscellaneous manufacturing lines apparently is affecting forward sales, but it is felt that actual specifications will support backlogs at the existing or even higher levels for at least 60 to 90 days. Reports of concessions under 1.95c, Chicago, base, for soft steel bars and other finished material persists. It is indicated that the circle of preferred buyers may have been broadened. Alloy steel bar mill operations remain at about 60 per cent. The bar mill operating rate as a whole is 85 to 90 per cent. Bar products deliveries are two to six weeks.

New York, March 4.—Steel bar business is making further recovery, some large sellers reporting increases up to 15 per cent. Prices are firm at 1.85c to 1.90c, Pittsburgh, on the general run of business. While two weeks can be done in some cases, deliveries generally are three weeks. Common iron bars are holding at 1.80c, Pittsburgh.

Pittsburgh, March 4.—Bar demand continues on a hand-to-mouth basis, with recent specifications showing little improvement over preceding weeks. Automotive requirements continue closely adjusted to current operations and a slight hesitancy is noted. February tonnage was close to that of January when figured on a daily rate. The market shows a firmer tone at 1.85c, Pittsburgh, and nothing is heard regarding a change in this price for second quarter. Few inquiries have developed for that period.

Cleveland, March 4.—While demand for hot-rolled bars is relatively heavier than that for other finished products, it has shown a steady decline, especially from automotive sources. Compared with a month ago, bookings are sharply lower for most makers. One producer has opened second-quarter books at 1.90c, Cleveland, for lots under 50 tons, and 1.85c for larger quantities. In Michigan the competition of Chicago mills is keener.

Philadelphia, March 4.—Demand for steel bars continues fair, with some mills reporting a slight increase in the daily rate of bookings. Subject to occasional concessions the market continues 1.85c to 1.90c, base, Pittsburgh.

Ferguson Co. Expands

Cleveland, March 4.—H. K. Ferguson Co., engineer and builder, announces a new division in the organization which will broaden activities in the commercial building field. This division, to handle the design and construction of banks, office buildings and other commercial structures, will be headed by Walter J. Aring, who has had experience in construction and the economic study of real estate development and was formerly with the Union Trust Co., Cleveland.

Abandon Merger of Gulf States, Rolling Mill

New York, March 4.—Officials of the American Rolling Mill Co., Middletown, O., definitely stated that negotiations for a merger with the Gulf States Steel Co., with mills at Gadsden, Ala., have been abandoned.

At a special meeting of stockholders of the Gulf States company here March 24 a change in by-laws will be proposed requiring a two-thirds stockholders' vote to authorize a sale of the company, instead of the current requirement of only a majority vote.

Continental Shares Inc., Cleveland, the investment trust which is now consummating the Republic Steel Corp. merger, has a stock interest in the Gulf States Steel company and there have been rumors recently that the company would be acquired to provide a steelmaking unit for Republic in the South.

Plates

Chicago Mills in Stronger Position —40,000 Tons of Tank Plates Pending—Eastern Markets Quiet

AN OPERATING rate of 90 per cent for plate mills in the Chicago district reflects the improved demand there. Chicago mills are making heavy shipments for pipe line work. Inquiries for tank plates aggregate 40,000 tons. The volume of business in February for Pittsburgh district mills was close to that of January. Some makers are opening books for second quarter.

PLATE PRICES, PAGE 105

Chicago, March 4.—Plate mills are in a stronger position with operations close to 90 per cent. Shipments are being made on about 45 miles of pipe line work for Empire Oil & Refining Co., as well as against future pipe line awards. It is indicated plate shipments for line pipe will increase late this month. Orders have been booked by local fabricators for 3000 tons of plates for oil refinery work in the Southwest. Inquiry for tank plates is close to 40,000 tons. Rock Island Refrigerator Co. is inquiring for 200 tank cars. Plates are 1.95c, Chicago, with differentials to preferred buyers.

It is understood the Central States Natural Gas Corp's Texas-Chicago pipe line will take 200,000 to 250,000 tons of plates. Details still are pending. It is reported the Barnsdall Corp. is preparing to lay an 800-mile gasoline line from the Mid-continent field to Milwaukee by way of Okmulgee and Barnsdall, Okla., Kansas City, Mo., Des Moines, Iowa, and Prairie du Chien, Wis.

New York, March 4.—Plate demand is slightly less active than a week ago. Mills generally continue to quote 1.90c to 1.95c, Coatesville. These prices are mentioned for second quarter, but no definite announcement has been made and there has been little inquiry for that period. The Texas Co. is in the market for additional tonnage for miscellaneous work in Texas. Few pipe line projects are pending and little ship work has developed. It is understood that the steamship MEUNCHEN, which recently sank at her pier in North river, will be reconditioned in Germany, with only sufficient repairs being made on this side to enable the vessel to cross the ocean.

Pittsburgh, March 4.—Plate tonnage during February totaled fairly close to the January volume although orders were smaller. Little additional new business has developed. Pending work requires a fairly large tonnage, The market continues 1.85c, Pittsburgh.

Cleveland, March 4.—Plate sales and specifications generally are small. Bethlehem Steel Co. was awarded 1000 tons of tank plates for locomotives

by a Lima, O., builder. The boiler and fire box plates went to the Otis Steel Co. Some plate tonnage is expected to be required by the Sun Oil Co. when it establishes a storage station here. Plate mills are opening books for second quarter at 1.85c, Pittsburgh, although some sales recently were made in the spot market at 1.80c and some first quarter contracts were revised downward to 1.80c.

Philadelphia, March 4.—Plate bookings are smaller and eastern mills are operating at 50 to 75 per cent. Prices continue 1.90c to 1.95c, base, Coatesville, subject to differentials on certain kinds of business. As a result of recent mail contracts the following vessels, taking substantial tonnages of plates, are expected to be ordered: Two, each of 20,000 deadweight tons, for United States Lines Inc.; two, each of 5000 deadweight tons, for Columbian Steamship Co., and two, each of 8000 deadweight tons, for the Panama Mail Line.

CONTRACTS PLACED

1000 tons tank plates for locomotives for Chesapeake & Ohio and allied railroads, ordered by Lima Locomotive Works from Bethlehem Steel Co.
950 tons, two tank shells, for Standard Oil Co., San Luis Obispo, Calif., to Western Pipe & Steel Co.
300 tons, tanks for Shell Oil Co., Seattle and vicinity, to Commercial Boiler Works.
100 tons, wharf boat for Weirton Steel Co., Weirton, W. Va., to Midland Barge Co.
100 tons, water tank, for Jamaica Water Supply Co., Jamaica, L. I., to Pittsburgh-Des Moines Steel Co.

CONTRACTS PENDING

1100 tons, 42-inch water main extension, Tacoma, Wash. Bids Feb. 26.
3500 tons, vessel for Peninsular & Occidental Line, Jacksonville, Fla. Bids March 7.
2500 tons, vessel for Fall River Line, Fall River Mass.

Refractories

Greatly Lessened Demand for Repair and New Construction

REFRACTORIES PRICES, PAGE 106

Pittsburgh, March 4.—Refractory business has tapered and February activity declined below January. Repair work by steel companies has moderated and brick for new equipment also has been in lighter demand than for the past several months. Prospective work for several companies, however, gives promise for second quarter. Jones & Laughlin Steel Corp. blew out one of its Aliquippa stacks the middle of February for relining. Prices are firm at $43 to $46 for first quality fire clay brick and $43 for silica brick. Magnesite continues $40 for imported material and $22, Washington, for domestic.

The process of making malleable castings was patented in England by Samuel Lucas on May 30, 1804.

Pipe

Municipal Demand Fairly Well Maintained—Private Orders Fair —150,000-ton Line Up for Cleve-

ANNUAL requirements are being placed by some municipalities, including Pittsfield, Mass., 1000 tons. R. D. Wood & Co. is low on 1460 tons for Brockton, Mass. Detroit opens bids next week on 2500 tons. North Central states maintain a moderate demand. Steel pipe gradually improves. Richmond, B. C., awarded 2000 tons to British interests.

PIPE PRICES, PAGE 106

Chicago, March 4.—Moderately heavy private buying of cast pressure pipe is reported in the North Central markets. It is estimated that present volume is slightly ahead of a year ago. Orders of 50 to 100 tons each are common. Detroit opens bids March 10 on 2500 tons of 6 and 8-inch pipe. The 800 tons of 4 to 12-inch pipe for Duluth is pending, as is 400 tons of 24-inch pipe for Minneapolis. Prices for 6 to 24-inch remain steady at $45.20 to $46.20, delivered Chicago.

Boston, March 4.—Cast pipe conditions remain good. Municipalities placed about 1600 tons last week. Considerable private business was awarded. While $46.10 is firm for 4-inch, the $42.10 to $43.10 range for 6-inch and larger is even firmer. Pittsfield, Mass., placed its 1930 requirements, about 1000 tons, and two other orders 350 and 250 tons, respectively, were awarded by Quincy, Mass., and Concord, N. H. R. D. Wood & Co. is low on 1460 tons.

Pittsburgh, March 4.—Despite a lack of marked improvement in aggregate demand for tubular products, standard pipe is showing signs of improved activity in the near future. Inquiry is heavier although selling has not broadened perceptibly. Oil country requirements of seamless material hold to their previous light volume. Mechanical tubing and locomotive and boiler tubes remain fairly active. No further developments are heard on pending line pipe projects; action is expected to be taken on several by spring. Pipe mill operations generally are unchanged at around 40 per cent.

Cleveland, March 4.—After surviving three of the worst months in the past year, December, January and February, the pipe mills look to March to develop greater tonnage. Buttweld tonnage is improving slightly as jobbers turn over their stocks. A 6-inch gasoline pipe line from Marcus Hook, Pa., to Cleveland for the Sun Oil Co., 550 miles, is estimated to take 150,000 tons or more, counting about 19 pounds to the foot. The general contract on 1200 tons of 24-inch cast pipe for the city is scheduled to be let at a meeting tomorrow. This is for the Belwoir boulevard job.

Birmingham, Ala., March 4.—Cast pipe production will be increased this month because of recent lettings. Deliveries are picking up. Practically all awards are for centrifugal and a wide range of sizes is noted.

CONTRACTS PLACED

1000 tons, 1930 requirements, Pittsfield, Mass., to Warren Foundry & Pipe Co.
350 tons, 6 to 12-inch for Quincy, Mass., to Warren Foundry & Pipe Co.
300 tons for Oregon-Washington Water Service Co., Vancouver, Wash., to American Cast Iron Pipe Co.
250 tons, 12 to 24-inch for Salem, Oreg., to American Cast Iron Pipe Co.
250 tons, 6 to 12-inch for Concord, N. H., to United States Pipe & Foundry Co.
200 tons, 6 to 10-inch class 150 Universal pipe, Pacific Lumber Co., Scotia, Calif., to Central Foundry Co.
125 tons, 4 to 8-inch for Tacoma, Wash., to unstated French interest.

STEEL PIPE

2000 tons 4 to 8-inch especially wrapped steel pipe for Richmond, B. C., to unstated British interest.

CONTRACTS PENDING

2500 tons, 6 and 8-inch for Detroit; bids March 10.
1460 tons, 24-inch for Brockton, Mass.; R. D. Wood & Co. low bidder.
350 tons, 20-inch class B, East Bay Municipal Utility District, Oakland, Calif., United States Pipe & Foundry Co. low bidder.
141 tons, 6 and 8-inch class B, improvement of Yell street, San Diego, Calif.; bids March 10.
Unstated tonnage, 25,000 lineal feet 2-inch, 20,000 feet 4-inch, 25,000 6-inch class B, and 3300 feet of 12-inch class C, for Dallas, Tex.

Westinghouse Co. Wins Harvard Award

Pittsburgh, March 4.—The Harvard Award for the general or institutional advertising campaign conspicuous for the excellence of its planning and execution established by Edward W. Bok, late philanthropist and publicist of Philadelphia, was presented to the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa. The award was the first given to a national institutional advertising campaign in newspapers since the founding of the event. The award, consisting of a certificate and a cash prize of $2000, was made by Dean Wallace B. Donham, of the Harvard Graduate School of Business Administration, to J. C. McQuiston, general advertising manager of the Westinghouse company, and to A. L. Bil-

ingsley, president of Fuller & Smith, Cleveland, advertising agency of Westinghouse.

Tin Plate

Consumers Specifying Liberally—Operations Slightly Higher

TIN PLATE PRICES, PAGE 106

Pittsburgh, March 4.—Tin plate is quiet in the spot market but specifications against contracts are coming out freely. Februarv tonnage was in good seasonal volume and tin plate requirements for most grades of cans compare favorably with the rate of a year ago. Mill operations are slightly heavier, with the current rate 75 to 80 per cent. Tin plate continues $5.25 per 100-pound base box, Pittsburgh.

Iron Ore

Ford Issues Inquiry for 330,000 Tons —Market Otherwise Quiet

IRON ORE PRICES, PAGE 106

Cleveland, March 4.—An inquiry for 330,000 tons of Lake Superior iron ore has been issued by the Ford Motor Co., Detroit. The company issued an inquiry at this same time last year for 360,000 tons, purchased about 340,000 tons soon thereafter, and additional tonnage making up the difference later in the season. In 1928 it purchased about 400,000 tons. As usual the inquiry calls for four grades, but there is some variation in tonnages this year from those of 1929. Shipments from the company's two mines in the Lake Superior district in 1929 totaled 145,591 tons. Its Blueberry mine, Marquette range, was just getting into production. The Ford company's inquiries have opened the market for a half dozen consecutive years; there is scarcely a week's difference in the time of issuance, a routine purchasing system evidently being the controlling factor rather than market conditions. Prices last year were established March 22, at an advance of 25 cents. No definite time is set for prices on the current Ford inquiry. The market is likely to be slower in opening this year. Shipments of iron ore from Lake Erie docks to interior furnaces in February were 1100 cars less than in February, 1929, according to the Ore & Coal Exchange.

Republic Merger Definite

Cleveland, March 4.—Formal announcement that the Republic Steel Corp. merger is operative is expected to be made, deposits of stock, which closed March 1, being sufficient. Under the title Republic Steel Corp. are being grouped the Republic Iron & Steel Co., Central Alloy Steel Corp., Donner Steel Co. and Bourne-Fuller Co.

Sheets

Automotive Tonnage Slower in Developing — Valley Operations Are Reduced to 63 Per Cent

A CONTRACTION in sheet business with the automotive industry has emphasized irregularity in the market. Miscellaneous requirements support Chicago district mill operations at 75 to 80 per cent, while valley independents have dropped from 78 to 63 per cent. Shipments to electrical, farm equipment and freight car plants are holding to a fairly high average.

SHEET PRICES, PAGE 105

Pittsburgh, March 4.—Sheet business continues at the slow rate of the past several weeks. Failure of automotive requirements to improve is held responsible for restricted activity. Requirements of some other sheet consumers, including the electrical equipment, farm implement and freight car building industries, hold to a good seasonal volume. Some contraction is noted in automotive tonnage. Additional inquiries are being received for various grades for second quarter. Producers have not named prices for that period, although intimations are heard of a possible advance in black and galvanized. Mills are meeting with fair success in stabilizing quotations at present levels and 2.65c for black, 3.30c for galvanized, and 2.10c and 2.25c for blue annealed are fairly well held on new business. Autobody sheets generally are 3.90c. Tin mill black is slightly easier, with 2.85c applied on some new tonnage. Operations are lower, the current rate 65 to 70 per cent.

New York, March 4.—Sheet business is moderately active, showing little change from a wek ago. Prices appear firm at 3.30c, Pittsburgh, for galvanized, and moderately steady at 2.10c for blue annealed plates and 2.25c for blue annealed sheets. Black sheets at 2.65c, Pittsburgh, are subject to shading of $1.

Buffalo, March 4.—Operations at district sheet mills have been increasing gradually since Jan. 1 and now average 75 per cent. Demand has reached a favorable stage, although automotive buying is not up to expectations. Prices are unchanged.

Chicago, March 4.—Sheet mill tonnage is picking up steadily and operations are holding at 75 to 80 per cent, the highest in many weeks. Tonnage is well diversified and coming from many districts, but orders from the Southwest are disappointing in view of the open weather there. While blue annealed sheets are leading, orders also are active for the lighter gages. It is understood second quarter books soon will be opened formally. Mills have been seeking to advance prices for second quarter, as it is stated galvanized sheets are selling at about the cost of production.

Youngstown, O., March 4.—New sheet business developed a distinct lull in the past week, which was not unexpected in view of the hesitancy shown by automotive builders. Independent mill operations are 63 per cent, compared with 78 per cent last week. Intimations come from automobile builders that after the middle of this month they expect higher operating rates. Several important makers of sheets here have opened books for second quarter at 2.75c, Pittsburgh, for common black; 3.90c for autobody; 4.00c for furniture; 3.40c for galvanized; 2.10c and 2.25c for blue annealed. Tin mill black has been reaffirmed at 2.90c and long terne plates at $3.90.

Cleveland, March 4.—Sheet specifications continue to lag. A local builder has been decreasing its schedule until now it is making about 3000 bodies per day. Sheets used in building construction have moved well, particularly to jobbers. Shipments of metal furniture sheets are at about the same rate as in January-February. Large quantities of blue annealed sheets for cars are being released for the orders recently distributed by Chesapeake & Ohio and allied railroads. Local sheet mills are about 60 per cent engaged. Autobody sheet prices are being reaffirmed at 3.90c, base, Pittsburgh for second quarter. While that figure applies on some prompt sales of metal furniture sheets, 4.00c is being quoted by some mills for second quarter. One or two mills quote 2.75c on black for that period, although 2.65c can be had for prompt shipment. Continuous mills name 2.15c on No. 13 gage blue annealed and 2.00c on No. 10. Jobbing mills are $2 to $3 a ton higher. Galvanized are 3.30c with one mill quoting 3.40c.

Cincinnati, March 4.—Sheet mills in this district have reduced production to about 65 per cent of capacity.

St. Louis, March 4.—A slightly better demand has developed for sheets and producers look for further improvement this month. No. 24 black sheets now are 3.07c, delivered, St. Louis; No. 10 blue annealed, 2.42c; No. 13 blue annealed, 2.57c, and No. 24 galvanized, 3.72c.

Philadelphia, March 4.—Demand for sheets is not holding up to the January rate. Black sheets are unchanged and sales were noted in the past week at 2.65c, base, Pittsburgh, for one pass cold rolled, although mills are asking 2.75c for second quarter. Galvanized are 3.30c, base, Pittsburgh. One or two jobbers have bought at less. Blue annealed continue 2.10c and 2.25c, Pittsburgh, subject to occasional concessions, while the sheets rolled on continuous mills are $2 to $3 a ton under the blue annealed prices.

Structural Shapes

Construction Slows Up—Awards Lower at 26,345 Tons For Week—Inquiries Fewer—Prospects Are Bright For Spring

A TENDENCY to hold back construction work in numerous market centers is encountered. Awards are lighter in the aggregate and inquiries fewer. Lettings of the larger type include 6800 tons of grade separation work at Chicago, a 2600-ton bridge in Texas, a 1500-ton publishing house at Boston, 4200 tons in two jobs in Canada, 1636 tons for two Hocking Valley bridges, a 1300-ton office building at Baltimore, and a 1000-ton school at Chicago. Chief among the pending items is a 40,000-ton office building at New York, and a terminal in Quebec, estimated to require ultimately, 100,000 tons. General contract for a San Francisco hospital, 1400 tons, was let. A 2000-ton roadway is up at New York. Backlogs, recently reduced, will soon be replaced.

STRUCTURAL SHAP E PRICES, PAGE 105

Chicago, March 4.—Including 6800 tons for railroad grade separation in the Chicago district, structural steel bookings reached about 12,000 tons, but more than 3000 tons of that goes outside the Chicago district. Prospects are not encouraging for active building work in the next 30 to 60 days, despite a fair number of pending projects. Structural mills are operating 75 to 80 per cent on specifications from car builders and miscellaneous manufacturing orders. Industrial machinery and supply orders are moderately active. Jobbers are moving light shapes in fair volume. Despite the uncertainty in the structural market as to the immediate future, deliveries on most sizes are three to six weeks. Plain material prices are based on 1.95, Chicago.

Boston, March 4.—Outstanding among shape awards is the 1500-ton printing plant job for the Herald Publishing Co., which went to the New England Structural Co. Other awards were deferred. New inquiries are few and slow to reach the contract stage.

Philadelphia, March 4.—Structural shape business continues quiet with eastern mills operating 75 to 85 per cent. The price range on standard shapes continues 1.80c to 1.90c, base, eastern mills, although 1.80c is more representative. Even this figure is being shaded on especially desirable tonnages.

Pittsburgh, March 4.—Recent structural steel awards involve small individual lots, 100 to 185 tons. Inquiry is fairly active but hesitancy is noted in closing. Shipments of plain material during February closely approximated the January tonnage although backlogs of fabricators were reduced during the month. The market on plain material generally is 1.85c, Pittsburgh.

Cleveland, March 4.—Structural awards are at low ebb and new inquiries are more quiet than in weeks. A large number of old inquiries still are before the trade, however, and on some of these action is expected within a week or two. Bids closed yesterday on the Mayflower hotel, Akron, O., the tonnage having declined to about 2500 instead of 3500 tons. Mills are ready to book second quarter contracts at 1.85c, Pittsburgh, but customers manifest indifference. Some fabricating shops still are able to operate full, while others find their backlogs shrinking without sustained replacements. Possibly 30,000 or 40,000 tons of light shapes are being distributed by the carbuilders recently awarded car orders by the Chesapeake & Ohio and allied roads.

Birmingham, Ala., March 4.—Contracts calling for 100 tons or more at a time are numerous and fabricating shops are busy. No near-future letdown is expected. Several small contracts were received the past week, including 160 tons for levee gates at New Orleans, to be furnished by the Ingalls Iron Works Co.

Montreal, Que., March 4.—Preliminary estimates of the tonnage involved in the Canadian National railway terminal here place requirements at more than 50,000 tons. Some believe the tonnage ultimately will reach 100,000, and be the largest single construction job in Canada. In addition to various buildings and overhead structures for the terminal itself, a warehouse and other buildings will be erected along the new elevated tracks. Bids may be asked within three weeks. A number of engineering firms have combined as the Terminal Engineers, which now are completing plans.

CONTRACTS PLACED

6800 tons, track elevation work for Chicago, Burlington & Quincy and other railroads entering Union station, Chicago, to American Bridge Co.

2600 tons, bridge over Trinity river, Texas, for Texas & Pacific railroad, to McClintic-Marshall Co.

2200 tons, hotel, Canadian National railways, Saskatoon, Sask., to Dominion Bridge Co.

2000 tons, post office, Calgary, Alta., to Riverside Iron Works.

1635 tons, two bridges, Hocking Valley railroad, to Mt. Vernon Bridge Co.

1500 tons, printing and publishing plant, *Boston Herald*, Boston, to New England Structural Co.

1300 tons, Baltimore Life building, Baltimore, to McClintic-Marshall Co.

1150 tons, plant, John A. Roebling's Sons Co., Trenton, N. J., to McClintic-Marshall Co.

1000 tons, Volta school building, Chicago, to unstated fabricator.

745 tons, custom house at Denver, to McClintic-Marshall Co.

700 tons, building, New York Power & Light Co., Albany, N. Y., to Belmont Iron Works.

600 tons, bridge, Georgetown, D. C., to American Bridge Co.

600 tons, building, R C A Victor Co. Inc., Camden, N. J., to Bethlehem Fabricators Inc.; incorrectly reported as 1000 tons last week, going to Belmont Iron Works.

500 tons, passenger tunnel, Pennsylvania railroad, to American Bridge Co.

435 tons, library, University of West Virginia, Morgantown, W. Va., to Wheeling Structural Steel Corp. This was inadvertently included in concrete bar awards in the Feb. 13 issue of IRON TRADE REVIEW.

370 tons, building, Warner Bros., West Fifty-fourth street, New York, to Levering & Garrigues Co.

300 tons, highway bridge, St. Paul, to McClintic-Marshall Co.

300 tons, bridge, New York Central railroad, Athol Springs, N. Y., to McClintic-Marshall Co.

270 tons, library, Berkeley, Calif., to Pacific Coast Engineering Co.

250 tons, power house, Bingham, Me., to F. P. Lyons Iron Works.

240 tons, Electric Realty building, Philadelphia, to Montgomery Iron & Steel Co.

190 tons, La Salle street substation, Commonwealth Edison Co., Chicago, to McClintic-Marshall Co.

185 tons, Masonic temple, Beaver Falls, Pa., to Pittsburgh Bridge & Iron Works.

160 tons for levee gates at New Orleans, to Ingalls Iron Works Co.

130 tons, apartment, Hays and Pierce streets, San Francisco, to McClintic-Marshall Co.

130 tons, power house at Salt Creek, Calif., for Pacific Gas & Electric Co., to Herrick Iron Works.

125 tons, plant addition, Parker Pen Co., Janesville, Wis., to R. C. Mahon Co.

125 tons, bridge, Eastonport, Pa., to McClintic-Marshall Co.

120 tons, power house at Tiger creek for Pacific Gas & Electric Co., to the Herrick Iron Works.

120 tons, apartment, Ellis near Larkin street, San Francisco, to Golden Gate Iron Works.

100 tons, building, Nahigian Bros., 169 North Wabash avenue, Chicago, to Wendnagel & Co.

100 tons, foot bridge, Nickel Plate railroad, Cleveland, to Republic Structural Iron Works.

100 tons, building, Republic Carbon Co., Niagara Falls, N. Y., to Pittsburgh Bridge & Iron Works.

100 tons, building, Tidewater Oil Co., Bayonne, N. J., to McClintic-Marshall Co.

100 tons, bridge, Lehigh Valley railroad, Jersey City, N. J., to American Bridge Co.

Awards Compared

	Tons
Awards this week	26,345
*Awards last week	36,480
Awards two weeks ago	34,405
Awards this week in 1929	55,933
Average weekly awards, 1930	34,030
Average weekly awards, 1929	38,603
Average weekly awards, Feb.	44,907
Total awards to date, 1929	357,292
Total awards to date, 1930	340,304

*Revised.

100 tons, warehouse, Fourth avenue, Oakland, Calif., to Judson-Pacific Co.

CONTRACTS PENDING

50,000 tons (may ultimately involve 100,000 tons) terminal and various other structures in connection with it, Canadian National railway, Montreal, Que.; Terminal Engineers may ask for bids within three weeks.
40,000 tons, estimated, 50-story office building, Lexington avenue and Fifty-first street, New York; plans being drawn.
2000 tons, state capitol building, Charleston, W. Va.; bids close March 5.
2000 tons, roadway, Manhattan bridge, New York; bids March 10.
1400 tons, hospital, Presidio, San Francisco; general contract to Clinton Construction Co.
1100 tons, second unit, Cincinnati terminal; Mt. Vernon Bridge Co. low bidder.
700 tons, grade crossing, New York Central railroad, New York.
600 tons, junior high school, Springfield, Mass.; bids March 12.
500 tons, service building, Commonwealth Edison Co., Chicago.
450 tons, plant, Consolidated Paper Co.., Monroe, Mich.; general contract to W. H. Knapp, Monroe.
430 tons, bridge, Baltimore & Ohio railroad, Columbus, O.
425 tons, apartment, West Thirty-first street, New York.
315 tons, bridges, New Jersey, route S41, section 1, Burlington county; also 38 tons bars; bids March 10.
300 tons, warehouse, Bell Telephone Co., Toledo, O.; project revived; bids in.
300 tons, apartment, Vermilyea avenue, New York; bids in.
286 tons, Peck school, Chicago.
250 tons, building, Sixty-ninth street, Philadelphia.
230 tons, addition to State building, San Francisco; general contract to Vogt & Davidson.
214 tons, Sauk river bridge, Snohomish county, Wash.; general contract to General Construction Co.
200 tons, school, Suffield, Conn.; bids March 11.
200 tons, state highway bridge, Little Hocking, O.; bids in.
145 tons, Live Stock building, Sacramento, Calif.; bids received.

Sheet & Tube Growth Brings Profits

Steady demand for steel for ten months of 1929 and cumulative benefits of plant betterments of recent years contributed to the excellent financial statement of Youngstown Sheet & Tube Co., Youngstown, O., according to James A. Campbell, chairman of the board, in his letter to stockholders.

The improvements include a new boiler power plant and electrification of equipment at Campbell works, a new coke plant at South Chicago works, sintering plant at Indiana Harbor works and various minor betterments. Open-hearth capacity has been added, a billet mill and a bar mill built in the Chicago district, to be partly in operation by April 1 and fully by July 1.

Authorization has been made for expansion of the seamless tube mills and construction of a continuous sheet mill at the Brier Hill works. The latter mill will permit better operation with reduced costs. Directors expect this mill will materially increase profits from this works.

A deduction from surplus of $3,584,644.69 for abandonment of certain properties among assets of the Steel & Tube Co. of America, important among which was the tube plant at Zanesville, O. This plant was completely dismantled and part of the equipment was moved to Youngstown.

Concrete Bars

Small Work Predominates—1450-ton Dam Placed in Missouri—Prices Unchanged

MODERATELY heavy aggregates of awards are reported in various market centers, made up mostly of small jobs. A Bagnell, Mo., dam, however, 1450 tons, went to Laclede Steel Co. An 1100-ton filtration plant nears the closing stage at Erie, Pa. Buffalo's pending list, totaling 3500 tons, is decreased only by the award of a few small lots.

REINFORCING BAR PRICES, PAGE 105

Chicago, March 4. — Moderately heavy small tonnage building work in reinforcing bars is being placed. Several hundred tons are pending for the Northwestern Life Insurance building, Milwaukee, and about 150 tons will be required for unit No. 5 of the Public Service Co. of Northern Illinois, at Waukegan, Ill. An apartment on Barry avenue, Chicago, will require 450 tons. Published prices for rail steel bars are listed at 1.75c, while billet bars are 2.00c, plus fabricating and engineering extras.

Boston, March 4.—Betterment noted week before last in concrete bars was not sustained last week. Several projects are about ready for closing but owners and buyers move cautiously. A number of small lots was ordered, making up a 250-ton aggregate.

Pittsburgh, March 4.—Business in reinforcing bars declined slightly during February from the January tonnage but prospects for improvement this month are regarded as more favorable than a year ago. Recent awards have been light but pending work remains fairly large. Bids have been closed on 1100 tons for a filtration plant at Erie, Pa. Bars for Allegheny county work remain pending. The market continues 1.95c, Pittsburgh, for stock lengths and 2.20c for cut lengths.

Buffalo, March 4.—Slow covering of reinforcing bar inquiry is reported. The total of 3500 tons noted as pending here has only been reduced by the award of several contracts of less than 100 tons apiece. Producers look for an active market later on this this month.

Cleveland, March 4.—The only concrete bar project of size actively pending here is about 250 tons for the piers for the Central-Lorain bridge. The general contract went to the Walsh Construction Co. A tonnage is up at Akron, O., for the Mayflower hotel, and some attractive work is pending at Toledo, O. The National Milling Co., Toledo, will construct a group of concrete grain storage tanks to double its present elevator capacity. These will cost approximately $600,000.

Awards Compared

	Tons
Awards, this week	5,996
Awards last week	8,430
Awards two weeks ago	8,750
Awards this week in 1929	6,550
Average weekly awards, 1929	5,849
Average weekly awards, 1930	4,933
Average weekly awards, Feb.	6,593
Total awards to date, 1929	61,853
Total awards to date, 1930	49,330

CONTRACTS PLACED

1450 tons, dam at Bagnell, Mo., for Union Electric Light & Power Co., to Laclede Steel Co.
1000 tons, Hoyt street sewer, Philadelphia, to Truscon Steel Co.
1000 tons, St. Paul garage, Baltimore, to Dietrich Bros.
900 tons, service building, Commonwealth Edison Co., Twenty-second and Throop streets, Chicago, to unstated fabricator.
300 tons, state road sewer, Philadelphia, to Truscon Steel Co.
211 tons, Jewish hospital, Cincinnati, to Pollak Steel Co.
180 tons, first section city hall concourse, Philadelphia, to Concrete Steel Co.
175 tons, dormitory, University of Santa Clara, Santa Clara, Calif., to W. S. Wetenhall Co.
135 tons, library, Berkeley, Calif., to Concrete Engineering Co.
130 tons, miscellaneous work including bakery at Alton, Ill., and building for Stephens college, Columbia, Mo., to Laclede Steel Co.
110 tons, two government warehouses, Goat Island, Calif., to Pacific Coast Steel Corp.
105 tons, school, San Rafael, Calif., to Concrete Engineering Co.
100 tons, Baltimore Life building, Baltimore, to Concrete Steel Co.
100 tons, building, Good Will Industries, Tacoma, Wash., to Northwest Steel Rolling Mills.
100 tons, bank, Salinas, Calif., to W. S. Wetenhall Co.

CONTRACTS PENDING

1100 tons, filtration plant, Erie, Pa., Engstrom & Wyman Inc. low bidder.
700 tons, school at Thirty-third street and Tasker avenue, Philadelphia.
350 tons, hospital, Presidio, San Francisco; general contract to Clinton Construction Co.
250 tons, piers for Central-Lorain bridge, Cleveland; general contract awarded Walsh Construction Co.
150 tons, unit No. 5, Public Service Co. of Northern Illinois, Waukegan, Ill.
150 tons, Mayflower hotel, Akron, O.; bids closed March 3.
Unstated tonnage, school addition, Glen Ellyn, Ill.; Max Dunning, architect.
Unstated tonnage, several grain storage tanks, National Milling Co., Toledo, O.
Unstated tonnages, $500,000 engineering building, and $400,000 commercial building, Notre Dame university, South Bend, Ind.
Unstated tonnage, sewage treatment plant, Rocky River, O.; plans to be issued by J. O. Taylor, Fisher building, Chicago, architect and engineer.

Rails, Cars

February Largest Car Buying Month Since October—Orders, Inquiries Both Decline in March

FROM the present outlook, March will not be as prolific in car awards as was February, when 16,928 freight cars were divided. Only about 5000 are actively pending, including 1500 refrigerators for Pacific Fruit Express and 1000 hopper bodies for Norfolk & Western. Latter road awarded 500 box cars to own shops. Present rail orders are for small amounts. At least 20 engines are up.

RAILROAD TRACK PRICES, PAGE 106

New York, March 4.—February car awards totaled 16,928, compared with 4966 for January this year and with 15,944 last February. February thus became the largest car ordering month since last October, when 19,506 cars were bought. Prospects for March are less promising since only 5000 are actively pending, including 1000 hopper bodies for Norfolk & Western. Passenger car demand is good, more than 250 coaches being pending. A full comparison of car awards by months for the past four years follows:

	1930	1929	1928	1927	1926
Jan.	4,966	13,196	4,160	14,710	8,830
Feb.	16,928	15,944	10,220	5,960	12,895
Total 2 Mo.	21,894	29,140	14,380	20,670	21,725
March		12,023	2,958	4,955	8,895
April		8,205	6,043	3,675	4,615
May		7,562	2,581	5,425	4,448
June		5,886	2,422	7,440	4,285
July		341	582	2,295	1,265
Aug.		2,854	677	1,181	152
Sept.		4,517	1,378	682	3,835
Oct.		19,506	2,853	886	2,840
Nov.		6,361	6,140	1,189	3,925
Dec.		9,710	4,799	14,897	8,990
Total		106,105	44,763	63,295	64,475

Norfolk & Western opens bids March 5 at Roanoke, Va., for 100 wrought steel wheels and requirements for one year on renewal parts for electrical equipment and new electrical apparatus.

Pittsburgh, March 4.—Specifications for track material are steady, although recent demand has been less active than during January. A few orders have been held up, largely on account of weather conditions. No additional inquiry is being received for either rails or track material. Light rails are quiet, with the price irregular due to rerolling rail competition.

Cleveland, March 4.—Supplementary rail purchases are not expected by rail mills selling here until June or July. Railroads are all expected to exercise their full options. The recent car orders distributed by Chesapeake & Ohio, Hocking Valley, Pere Marquette and Erie are estimated to involve 90,000 tons of plates and blue annealed sheets. These orders now are being distributed among the mills.

Chicago, March 4.—Western rail mills, operating at practical capacity, have booked several additional miscellaneous rail orders, totaling 3000 to 3500 tons, and about 6000 tons of track accessories, the latter to cover urgent needs. Quarterly buying of track fastenings has not started. Railroads are pressing for rail shipments. The car market is quiet.

CAR ORDERS PLACED

American Refrigerator Transit Co., 1000 refrigerator cars, to Mt. Vernon Car Mfg. Co.
Central Supply Co., Philadelphia, 400 mine cars, to Sanford Day Iron Works.
Chicago, Burlington & Quincy, 10 baggage cars, to own shops.
Eastern Michigan Railways, 10 Hart convertible ballast cars, to American Car & Foundry Co.
Gulf, Mobile & Northern, two combination passenger and baggage gasoline-electric rail motor cars, to J. G. Brill Co.
Norfolk & Western, 500 all-steel box, to its own shops at Roanoke.
Texas Pacific, 25 caboose underframes, to Pullman Car & Mfg. Corp.

LOCOMOTIVE ORDERS PLACED

Alaska railroad, one rotary snow plow, to American Locomotive Co.
Canadian Pacific, eight snow plows, to its Angus shops, and 10 locomotive tenders, to Montreal Locomotive Works.
Georgia, Ashburn, Sylvester & Camilla, one locomotive, to Baldwin Locomotive Works.

CAR ORDERS PENDING

Amiesite Asphalt Co. of America, Philadelphia, five flat cars.
Chicago, Rock Island & Pacific, five passenger cars.
Long Island, 20 to 40 multiple-unit coaches.
Newfoundland Railway, 50 box cars.
New York, New Haven & Hartford, 15 coke cars.
Norfolk & Western, 1000 all-steel hopper coal car bodies.
Pacific Fruit Express, 1500 refrigerator cars contemplated.
Rock Island Refrigerator Co., 200 tank cars.
White Eagle Oil & Refining Co., Kansas City, Mo., 25 tank cars.

LOCOMOTIVE ORDERS PENDING

Erie, ten locomotives.
Illinois Terminal, two locomotives.
Louisville & Nashville, eight locomotives; inquiry again out.

Canadian Output Close to Normal Rates

Toronto, Ont., March 4.—Production of pig iron in Canada during January was 87,097 tons which was 5 per cent over the 82,632 tons of December and slightly under the 87,764 tons of January, 1929. Compared with December the output of basic iron advanced from 45,292 tons, to 48,898 tons, and malleable iron from 4901 tons to 8108 tons. Foundry iron was slightly lower at 30,073 tons, compared with 32,436 tons. Production of ferroalloys during January at 6943 tons was slightly under the 6986 tons reported for December.

The output of steel ingots and direct steel castings in January at 115,200 tons was 40 per cent over the 82,415 tons for the previous month, but slightly under the 116,260 tons produced in January, 1929. Compared with December, production of steel ingots in January advanced from 76,389 tons to 108,644 tons and steel castings showed an increase from 6026 tons to 6556 tons. Of the month's total all but 84 tons of ingots and 308 tons of castings were made for further use of the producers, the remainder being intended for sale.

Cold Finished Steel

Specifications Light and Forward Buying Is Small

COLD FINISHED PRICES, PAGE 106

Pittsburgh, March 4.—Demand for cold-finished steel bars and shafting is slow, largely due to restricted automotive activity. Requirements of other consumers, including implement builders, who are in their active season, remain fair but specifications for automotive use show little gain since a month ago. Specifications are adjusted closely to current requirements and few buyers are anticipating needs. Incoming business and shipments during February were slightly smaller than during January. The market remains steady at 2.10c, Pittsburgh.

Cleveland, March 4.—The 2.10c, Cleveland, price is being named for second quarter contracts, with small buying response. Automotive interest is slowly reviving. Specifications in February were disappointing. Screw stock is steady at 2.20c, Cleveland, and is fairly active.

Bethlehem Shows Film

Nine reels of motion picture film describing the manufacture of structural steel shapes, taken by the Bethlehem Steel Corp., Bethlehem, Pa., and being shown in various cities by George A. Richardson, director of technical publicity, is attracting much favorable comment. The film and its accompanying lecture was presented before an audience in Public auditorium, Cleveland, March 3.

The picture depicts all operations from the unloading of raw materials to loading of finished material at the same docks. Views were taken from most unusual points—there are close-ups and "crane's eye" views which together give both general and detailed impressions. The film and lecture emphasize the great size and activity of a modern steel plant.

The lecture and film are to be presented in other cities as follows: Columbus, O., March 6; Troy, N. Y., March 12; Bethlehem, Pa., March 14 and 19; New York, March 18 (tentative); Washington, March 20. Four weeks will be spent in the Middle West.

Strip

Production Continues to Be Hindered By Lack of Automotive Buying—Prices Hold

PRODUCERS of strip steel are keeping production close to specifications and consumers are taking only sufficient for current needs. Specifications are slightly above those of January. Second quarter tonnage is offered at unchanged prices, but users are little interested. Hot-rolled strip is in better demand than cold. Some shading is reported on cold-rolled.

STRIP PRICES, PAGE 106

Pittsburgh, March 4.—Incoming strip business during February showed a slight gain over that of January although a slight hesitancy is noted in recent buying. Automotive consumption continues restricted and specifications are adjusted closely to immediate requirements. Mill operations closely follow the daily rate of buying and currently are lower at 50 to 60 per cent for hot mills and 30 to 40 per cent for cold mills. Producers are ready to take second quarter requirements at 1.80c and 1.90c for the two sizes of hot strip and 2.65c for cold strip, although little interest as yet is shown in tonnage beyond March. Prices are fairly steady, with recent prices lower than 2.65c on cold-rolled strip showing no tendency to become more prevalent.

New York, March 4.—Cold-rolled strip is easier at 2.60c to 2.65c, Pittsburgh. A softer tone also prevails in hot strip, at 1.80c to 1.90c, Pittsburgh, depending upon widths, subject to occasional shading. Business is restricted and unchanged, with deliveries on hot strip about two weeks and on cold strip two to three weeks.

Philadelphia, March 4.—Hot strip continues 1.80c and 1.90c, Pittsburgh, according to width, subject to occasional concessions on attractive tonnage. Mills are asking those prices for second quarter. Cold strip is unchanged at 2.65c, Pittsburgh, for current business with mills seeking 2.75c, Pittsburgh, for second quarter.

Youngstown, O., March 4.—Consumers of hot-rolled strip continue to urge shipments, especially for narrower widths. Mills are restricting commitments to the end of March. Mills now feel a strong urge to reaffirm present prices for second quarter, or 1.90c for narrow and 1.80c for wide, both Pittsburgh base. Cold-rolled strip needs do not appear so insistent as for hot-rolled but are of sufficient volume to keep valley mills operating about 60 per cent, and better rates are expected by the end of March. For second quarter delivery mills plan to offer 2.75c Pittsburgh and Cleveland, an advance of $2 a ton.

Cleveland, March 4.—Strip steel moves sluggishly as far as automotive trade is concerned. Miscellaneous consuming lines have maintained a fairly good demand and a local cold strip mill, catering to that buying class, was on double turn until last week. Sellers depending upon automobile buyers, however, are hungry for tonnage. They adhere to 2.65c, Cleveland, however, and have announced that for second quarter. Hot strip tonnage is slightly heavier in some instances and lower in others.

Chicago, March 4.—Cold-rolled strip producers see no improvement in automotive demand. It is estimated that cold-rolled operations are not much more than 40 to 45 per cent for the industry as a whole, although some mills are reported to be above 50 per cent. Hot-rolled strip producers are in a better position in operating conditions, at about 65 per cent. Hot-rolled quotations are 1.90c to 2.00c, Chicago, for wide and narrow strip. Some reports in this district are that cold-rolled tonnage has been quoted under 2.65c, Pittsburgh-Cleveland, base.

J & L Men Promoted

William B. Todd, until recently general manager of sales in the cold-finished steel department of the Jones & Laughlin Steel Corp., Pittsburgh, has been appointed assistant general manager of sales of that company, with automobile business as a whole, under his general direction. J. Davis Allen, for a number of years associated with the cold-finished sales department, has been named to succeed Mr. Todd.

Wire

Country Buying Aids Mills—Industrial Use Continues to Support Market Generally

MANUFACTURERS' wire continues the foundation of activity in wire and its products but advancing spring has quickened demand from the country and better tonnage is moving through jobbers to that destination. Second quarter books are being opened on the same price basis as at present. Some revision in classification of woven-wire fencing is being made.

WIRE PRICES, PAGE 106

Chicago, March 4.—A better tone is shown in the wire market as jobber and dealer tonnage from the agricultural districts has picked up moderately. This is attributed in part to warmer weather. Manufacturers' wire is holding its own. Wire mill operations remain at about 50 to 55 per cent. Mills have quoted present prices for some second quarter business and it is expected books will be formally opened shortly on the basis of 2.45c, Chicago or western mills, for bright wire, and $2.35 to $2.45 for wire nails. Efforts are being made to stiffen the nail price.

Worcester, Mass., March 4.—February closed with no large tonnages on wire producers books, but March looks better and will probably bring first quarter figures to about 8 to 12 per cent below last year on both shipments and bookings. Automobile tire wire is in demand. Plain bright wire to dealers remains 2.55c to 2.65c, base, Worcester.

Cleveland, March 4.—Some wire mills are opening books for second quarter and the price appears to be firming up somewhat. While 2.40c, Cleveland has been the official price on manufacturers' wire for first quarter, makers are holding this for second quarter. The same applies to nails at $2.30. Changes have been made in the method of quoting woven wire fencing which affect the entire schedule. This schedule was put in effect Feb. 17 by the leading producer. Other makers retain their price of $65 to retailers pending analysis of the new schedules.

New York, March 4.—Demand for wire is showing substantial gain in the experience of some sellers. The expected pickup in nails has not materialized and they are moderately firm at $2.30, Pittsburgh-Cleveland, for jobber and general trade, with bright wire firm at 2.40c, Pittsburgh-Cleveland, for manufacturing trade.

Pittsburgh, March 4.—Specifications for most grades of wire products are steady with little change from a month ago. February tonnage compared favorably with that of January although merchant products were in lighter demand than in the preceding month or February, 1929. Manufacturers' wire continues in fair demand although buying has not improved during the past several weeks. The market on bright hard wire remains steady at 2.40c, Pittsburgh, although easiness continues in merchant grades and in wire rods. The latter are off $2 a ton at $38. Wire nails generally are $2.25 to $2.30.

Nonferrous Metals

Lead Prices Show Weakness While Zinc Is Easy and Tin Quotations Drop to New Low Level—Copper Continues in Firm Market

Prices of the Week, Cents a Pound

	Copper—Electro delivered	Copper—Lake delivered	Copper—Casting refinery	Straits Tin—New York Spot	Straits Tin—New York Futures	Lead—New York	Lead—East St. Louis	Zinc—St. Louis	98-99% Aluminum	Spot Antimony	Ingot Nickel
Feb. 26	18.00	18.10	17.25	38.25	38.55	6.25	6.10	5.12½	23.90	9.00	35.00
Feb. 27	18.00	18.10	17.25	38.00	38.30	6.10	5.95	5.10	23.90	9.00	35.00
Feb. 28	18.00	18.10	17.30	37.62½	37.95	6.10	5.95	5.10	23.90	9.00	35.00
March 3	18.00	18.10	17.30	37.50	37.90	6.00	5.85	5.10	23.90	9.00	35.00
March 4	18.00	18.10	17.30	37.25	37.55	6.00	5.85	5.10	23.90	8.90	35.00

NEW YORK, March 4.—Prices of nonferrous metals have been mostly on the down trend in the past week, but copper has been conspicuous for its firmness. Weakness in lead was surprising. Tin prices fell to a new low level. Zinc eased off slightly. Silver has dropped so far as to be of important consideration in the mining of lead and copper, and exert further influence on the metal situation.

Shipments of all metals continue at steady rates, mostly about 75 to 80 per cent of last year's average in the domestic market. Most of the weakness in prices originates in foreign markets, and this is especially true of lead and silver.

Copper products are in good demand. Sales of brass products are moderate. Prices of these products are unchanged.

Copper—Moderate domestic business is being done every day. Buying is more steady now than it was some time ago, but the total remains lighter than last year. All orders are for prompt shipment. Export business, which showed an improvement early in the year, has tended to lag lately. February statistics are likely to show another increase in refined stocks, but curtailment of output at the mines is expected to be more apparent.

Zinc—New business has been extremely light as users covered immediate requirements a few weeks ago. It is believed that additional purchases soon will be necessary. The market has slipped off gradually from 5.15c to 5.10c, East St. Louis. Not all smelters will meet this price. Supplies continue out of balance, but it appears as if consumption of zinc in the brass mills and galvanizing shops should increase materially in the spring.

Tin—Prices of this metal continue to fall gradually with nearly every day marking a new low level for the past several years. Consumers have bought lightly for nearby shipment, mostly, though a few sales have been scattered in distant months. The world visible supply of tin increased 4549 tons in February to the largest in the history of the industry. The increase was more than the trade had expected. Straits shipments were large and all world deliveries light.

Lead—The recent price drop of ¼-cent surprised the entire nonferrous metal market. It was caused by weakness in the European market. Consumption here continues the largest of any nonferrous metal.

Aluminum—Business is quiet, shipments of fair size, and prices unchanged.—*Daily Metal Trade.*

Mill Products

Base price cents per pound f.o.b. mill, except where otherwise specified

SHEETS	
Yellow brass (high)	23.25
Copper, hot rolled	27.75
Lead, full sheets (cut ½c more)	9.75
Zinc sheet (100-pound base)	10.50
Zinc strip (100-pound base)	9.50
Aluminum, flat sheets, up to 10 gage, 3 to 72 inches wide	31.30
SEAMLESS TUBE	
Yellow brass (high)	28.25
Copper	29.25
RODS	
Yellow brass (high, full turnings)	21.25
Naval brass	24.00
WIRE	
Copper	19.87½
Yellow brass (high)	23.75

Old Metals

Dealers' buying prices, cents per pound

HEAVY RED BRASS	
New York	11.25 to 11.75
Chicago	11.25 to 11.50
Cleveland	11.50 to 12.00
St. Louis	10.50 to 10.75
HEAVY YELLOW BRASS	
Cleveland	7.50 to 8.00
HEAVY COPPER AND WIRE	
New York	14.25 to 14.50
Boston	14.00 to 14.50
Chicago	13.75 to 14.00
Cleveland	13.50 to 14.00
St. Louis	10.50 to 11.00
RED BRASS BORINGS	
New York	10.25 to 10.75
YELLOW BRASS TUBING	
Cleveland	7.50 to 8.00
LIGHT COPPER	
New York	12.25 to 12.50
Chicago	12.25 to 12.50
Cleveland	12.00 to 12.50
St. Louis	10.50 to 11.00
LIGHT BRASS	
Boston	6.50 to 7.00
Chicago	6.25 to 6.75
Cleveland	6.00 to 6.50
St. Louis	6.00 to 6.50
ZINC	
New York	2.75 to 3.00
Cleveland	2.25 to 2.50
St. Louis	2.75
ALUMINUM	
Clippings, soft, Cleveland	14.00 to 15.00
Clippings, hard, Cleveland	10.50 to 11.00
Borings, Cleveland	7.50 to 8.00
Cast, Cleveland	9.50 to 10.00
Cast, Boston	10.00 to 10.50
Cast, St. Louis	10.50 to 11.00

Secondary Metals

Remelt aluminum No. 12	16.25 to 16.75
Brass ingot, 85-5-5-5	15.50 to 15.75

Coke By-Products

Shipments Expand Moderately—Phenol Shaded—Take More Naphthalene

New York, March 4.—Contract shipments of light oil distillates are slightly heavier. Prices are firm and unchanged. A fair spot demand is noted, but the bulk of the volume it against contracts. Toluol is slightly more active, but xylol has been proportionately more so. Benzol is moving in good volume with motor fuel demand furnishing the bulk of the backlog for that material.

Buying during the first quarter indicates that some consumers entered the year with rather large inventories. Until prices slumped late in January, seasonal buying was slow.

While no pronounced dullness prevails in the market for phenol, buying is not heavy and supplies are well up with demand. Some shading under 17.00c is noted on outside material.

Consumers are taking naphthalene in larger shipments as spring buying approaches its peak. Spot demand is light. The dye trade is taking less material than last year, but buying is generally well spread. Sulphate of ammonia is unchanged and moving in moderate volume.

Coke By-Products

Per Gallon at Producers' Plants in Tank Lots

	Spot
Pure benzol	$0.22
90 per cent benzol	0.22
Toluol	0.35
Solvent naphtha	0.28
Commercial xylol	0.28
Per Pound at Producers' Plants in 250-Pound Drums	
Phenol	0.17
Per Pound at Producers' Plants	
Naphthalene flakes	0.04½ to 0.05½
Naphthalene balls	0.05½ to 0.06½
Per 100 Pounds Delivered	
Sulphate of ammonia	$2.10 to $2.20

Quicksilver Market Firm

New York, March 4.—Quicksilver is in a firm market at $123.50 to $124.50 a flask.

Warehouse

High Aggregate Tonnage Includes Many Small Orders—Sheets Lower at Buffalo, Los Angeles—Chicago Adopts Quantity Extras

NUMEROUS orders are being received by warehouses but individual tonnages are small. Lower prices are in effect at Buffalo on galvanized sheets. Los Angeles jobbers also reduced sheets and advanced bands. Railroad material moves well at St. Louis. Chicago warehouses adopted new quantity differentials March 3.

New York—Jobbers expect an early pickup in business. Trading to date has comprised numerous orders but a light aggregate tonnage. Sheet prices are still unsettled; the market is firmer.

Philadelphia—Sales here reflect a smaller daily average than in January, March not reflecting any appreciable improvement. Prices are firm.

Pittsburgh—Sales continue slow, demand declining in several lines. Total activity retains most of the improvement noted last month. Sheets move poorly. Prices still unsteady, are firmer than several weeks ago. Price irregularity is noted in bars.

Buffalo—Sales volume grows slowly. Most materials share in the general betterment noted in February. New prices on galvanized sheets range from 4.40c for 25 bundles or more to 4.60c for smaller quantities.

Cincinnati—February business did not reach the volume of February, 1929, but is showing improvement.

Cleveland—Business in February closely resembled January's. More tonnage is expected as soon as milder weather permits a start on Cleveland's $50,000,000 building program. Quantity differentials are contemplated here.

Chicago—Effective March 3, warehouses adopted quantity differentials for all hot rolled heavy finished material which result in reductions of all except base weights, and lots under 400 tons, the latter differential being above the base price. Lots of 400 to 3999 pounds, inclusive, remain at base, lots of 4000 to 7999 pounds, the differential is 15 cents per 100 pounds under base; 8000 to 14,999 pounds, 25 cents under; and for 15,000 pounds and over, 35 cents under base. For 399 pounds or less, 50 cents per 100 pounds is added to base. Differentials apply only on single orders.

Los Angeles—Blue annealed and black sheets have been reduced $3 a ton; galvanized, $2. Bands have been increased from 4.15c to 4.30c.

St. Louis—Irregularity is noted in warehouse conditions. Some lines, chiefly railroad, show an improvement. River and levee work is active.

Warehouse Quotations in Cents Per Pound at Leading Market Centers

STEEL BARS

Baltimore	3.25c
Boston	3.265c
Buffalo	3.30c
Chattanooga	3.25c
Chicago	3.00c
Cincinnati	3.30c
Cleveland	3.00c
Detroit	3.00c
Houston	3.00c
Los Angeles	3.30c
New York††‡‡	3.25c
Philadelphia*	2.80c
Pittsburgh	2.90c
Portland	3.00c
San Francisco	3.40c
Seattle	3.15c
St. Louis	3.15c
St. Paul	3.25c
Tulsa	3.75c to 4.04c

IRON BARS

Baltimore	3.25c
Boston	3.265c
Buffalo	3.30c
Chattanooga	3.25c
Chicago	3.00c
Cincinnati	3.30c
Detroit	3.00c
New York††	3.25c
Philadelphia*	2.80c
St. Louis	3.15c
Tulsa	3.75c to 4.04c

REINFORCING BARS

Baltimore	3.31c
Boston	3.265c to 3.50c
Buffalo	2.95c
Chattanooga	3.25c
Cincinnati	3.15c
Cleveland	2.25c to 2.44c
Detroit	2.30c to 3.00c
Houston	3.00c
Los Angeles cl.	2.40c
Los Angeles lcl.	2.70c
New York	2.65c to 3.10c
Philadelphia	2.65c to 3.00c
Pittsburgh	2.75c
San Francisco cl.	2.30c
San Francisco lcl.	2.60c
Seattle	3.00c
St. Louis	3.15c
Tulsa	3.75c to 4.00c
Youngstown	2.30c to 2.60c

STRUCTURAL SHAPES

Baltimore	3.25c
Boston	3.365c
Buffalo	3.40c
Chattanooga	3.35c
Chicago	3.10c
Cincinnati	3.40c
Cleveland	3.00c
Detroit	3.10c
Houston	3.25c
Los Angeles	3.30c
New York††‡‡	3.30c
Philadelphia*	2.70c
Pittsburgh	3.00c
Portland	3.00c
San Francisco	3.40c
Seattle	3.15c
St. Louis	3.25c
St. Paul	3.35c
Tulsa	3.75c to 4.14c

PLATES

Baltimore	3.25c
Boston	3.365c
Buffalo	3.40c
Chattanooga	3.35c
Chicago	3.10c
Cincinnati	3.40c
Cleveland, ¼ in. and thicker	3.00c
Cleve., 3/16-in.	3.20c
Detroit	3.10c
Detroit, 3/16-in.	3.10c
Houston	3.00c
Los Angeles	3.30c
New York‡‡	3.30c
Philadelphia*	2.70c
Pittsburgh	3.00c
Portland	3.00c
San Francisco	3.40c
Seattle	3.15c
St. Louis	3.25c
St. Paul	3.35c
Tulsa	2.75c to 4.14c

NO. 10 BLUE ANNEALED

Baltimore	3.60c
Boston 3/16-in.	3.915c
Buffalo	3.50c
Chattanooga	3.75c
Chicago	3.35c
Cincinnati	3.45c
Cleveland	3.25c
Detroit	3.35c
Houston	3.90c
Los Angeles	3.85c
New York‡‡	3.50c to 3.90c
Portland	3.75c
Philadelphia*†	3.25c
Pittsburgh**	3.25c to 3.35c
San Francisco	3.90c
Seattle	4.00c
St. Louis	3.45c
St. Paul	3.54½c
Tulsa	4.20c to 4.34c

NO. 24 BLACK SHEETS

Baltimore*†	3.75c
Boston	4.85c
Buffalo	4.20c
Chicago	4.05c
Cincinnati	4.05c
Cleveland***	3.75c
Detroit	3.95c
Los Angeles	4.75c
New York	3.65c to 3.90c
Philadelphia*†	3.80c
Pittsburgh**	3.65c to 3.75c
Portland	4.90c
San Francisco	4.90c
Seattle	5.00c
St. Louis	4.25c
St. Paul	3.79c
Tulsa	4.34c

NO. 24 GALVANIZED SHEETS

Baltimore*†	4.50c
Boston	5.60c
Buffalo	4.40c to 4.60c
Chicago (local delivery)	4.60c
Chicago (outside shipment)	4.35c to 4.60c
Cincinnati	4.90c
Cleveland***	4.50c
Detroit	4.60c
Houston	5.40c
Los Angeles	5.20c
Pittsburgh**	4.30c
Philadelphia*†	4.45c
Pittsburgh**	4.40c
Portland	5.50c
San Francisco	5.30c
Seattle	5.50c
St. Louis	4.85c
St. Paul	4.58c
Tulsa	5.10c to 5.35c

BANDS

Baltimore	4.00c
Boston	4.015c to 5.00c
Buffalo	3.65c
Chattanooga	3.45c
Chicago	3.20c
Cincinnati	3.50c
Cleveland	3.25c to 3.65c
Detroit 3/16-in. and lighter	3.30c
Houston	3.65c
Los Angeles	4.30c
New York‡‡	3.75c
Philadelphia*	3.30c
Pittsburgh	3.25c
Portland	4.00c
San Francisco	3.75c
Seattle	4.00c
St. Paul	3.50c
Tulsa	4.50c to 4.69c

HOOPS

Baltimore	4.00c
Boston	5.50c to 6.00c
Buffalo	4.05c
Chicago	3.75c
Cincinnati	4.05c
Cleveland	3.25c to 3.65c
Detroit, No. 14 and lighter	3.80c
New York‡‡	4.25c
Philadelphia*	3.55c
Pittsburgh	4.25c
Seattle	5.00c
St. Paul	4.00c

COLD FINISHED STEEL

	Rounds, hexagons	Flats, squares
Baltimore (c)	3.50c(a)	4.00c
Boston	3.55c	4.05c
Buffalo	3.95c	4.45c
Chattanooga*	3.85c	4.35c(d)
Chicago	3.60c	4.10c
Cincinnati	3.85c	4.35c
Cleveland	3.65c	4.15c
Detroit	3.85c	4.35c
Los Angeles (a)	4.50c	.....
New York	3.50c	4.00c
Philadelphia*	3.40c	3.90c
Pittsburgh	3.70c	4.20c
Portland (a)	4.50c	.....
San Fran. (a)	4.25c	.....
Seattle (a)	4.75c	.....
St. Paul (a)	3.85c	.....
Tulsa	4.64c	5.14c

(a) Rounds only; (d) Squares only.

COLD ROLLED STRIP

Boston, 0.100-inch 500 pound lots	5.30c
Buffalo	5.85c
Chicago (b)	6.10c
Cincinnati	7.15c
Cleveland (b)	5.95c
Detroit	5.80c
New York	5.15c
Philadelphia (c)	5.15c

(b) Net base, straightening, cutting, boxing 1 ton or more.
(c) Plus mill, size and quantity extras.

SWEDISH IRON AND STEEL

New York duty paid

Hollow drill steel	13.00c
Iron bars, round	6.10c
Iron bars, flats and squares	6.50c

*Plus quantity differentials. ***Less 0.15c ‡‡Minus quantity differentials. where more than 10 bundles are ††Domestic bars. **Less than 25 sheets. *†50 or more bundles. ordered at once for delivery at one time.

Pacific Coast

Better Tonnages Being Booked — Activity Greater as Season Advances

STEEL tonnages placed under contract on the Coast are increasing and pending business promises continuance of demand. In general lots are smaller than a year ago but spring weather is bringing larger requirements. Pipe is an important item of trade, both in cast and steel. Tanks and pipe call for a fair tonnage of plates. Reinforcing and structural steel needs grow.

San Francisco, March 1.—(*By Air Mail*)—Awards of iron and steel products on the Pacific coast during the past week included 950 tons of plates for tanks for the Standard Oil Co., 200 tons of cast iron pipe for the Pacific Lumber Co., Scotia, Calif., and 270 tons of structural shapes for a library in Berkeley, Calif. Demand is well sustained for this season of the year and a number of important projects are pending. Prices except for plates, are fairly firm.

Pig Iron and Coke

Foundry activity is moderate, most jobbing plants operating on business booked only a few days in advance. As a result sales and inquiries have not been numerous or large. Specialty plants and sanitary ware foundries are operating on fair schedules. Prices remain unchanged.

Coast Pig Iron Prices

Utah basic	$25.00 to 26.00
Utah foundry	25.00 to 26.00
*German	24.25
*Indian	25.00 to 26.00

*C.i.f. duty paid.

Bars, Plates and Shapes

Demand for reinforcing steel bars has improved. Awards this week included 110 tons for two government warehouses on Goat Island, placed with the Pacific Coast Steel Corp., 175 tons and 100 tons respectively for a dormitory at Santa Clara University and a bank in Salinas, Calif., booked by W. S. Wetenhall Co., and 135 tons and 105 tons respectively for a library in Berkeley and a school in San Rafael, secured by the Concrete Engineering Co. A fair volume is pending, including 350 tons for a hospital at the Presidio. No change in out-of-stock prices in the Los Angeles and San Francisco districts are noted. Merchant bar demand is not heavy, most inquiries and sales calling for small lots. On this class of material 2.35c, c.i.f., appears to be firm.

Western Pipe & Steel Co. took 950 tons of plates for shells for two 93,000-barrel and two 134,000-barrel tanks for the Standard Oil Co. at San Luis Obispo. Bids have also been opened on 368 tons for a 20 and 24-inch welded steel pipe line for the East Bay municipal utility district, Oakland. Prices are now general at 2.20c, c.i.f. coast ports.

Larger awards included 270 tons for a library in Berkeley, placed with the Pacific Coast Engineering Co., 130 tons for an apartment on Hays street, San Francisco, booked by McClintic-Marshall Co., and 120 tons and 130 tons respectively for power houses at Tiger Creek and Salt Creek, Calif, for the Pacific Gas & Electric Co., awarded to Herrick Iron Works. A fair volume of pending business is in sight. The general contract for a hospital at the Presidio, San Francisco, involving 1400 tons, was awarded to the Clinton Construction Co. Plain material remains firm at 2.35c, c.i.f.

Other Finished Material

Some improvement in demand for cast iron pipe is noted. The Central Foundry Co. took 200 tons of universal pipe for the Pacific Lumber Co., Scotia, Calif. San Diego will open bids March 10 for 141 tons for the improvement of Yell street. The United States Pipe & Foundry Co. was low bidder on 350 tons of 20-inch class B pipe for Oakland, Calif. Demand for standard steel pipe remains quiet, most distributors having well rounded stocks. No pipe line inquiries of importance are in the market.

Active Season Opens

Seattle, Feb. 26.—Spring work and outdoor construction are opening and increased quantities of iron and steel products will probably be purchased during the remainder of the first half year. Considerable business is pending but there is a disposition in some quarters to delay award of contracts.

Pig Iron and Coke

Foundry operations continue slow and uneven. Some cannery work has been placed but marine and logging orders are lacking. Ordinarily this should be a busy period in this district. Local plants have recently placed small orders for Tyneside coke at $14 and Alabama at $13.50. Columbia pig iron is reported reduced $1 per ton to $25.50 in 100-ton lots and $26 in smaller quantities. Both iron and coke are in limited demand because users are generally well stocked.

Bars, Plates and Shapes

Merchant bars are moving rather slowly while reinforcing materials show less demand than in last quarter of 1929. Several important reinforcing jobs are up for award but sales are mostly in car lots. Mill prices are unchanged, concrete bars at 2.30c and merchant bars at 2.35c. Northwest Steel Rolling Mills booked 100 tons for reinforcing materials for the Good Will Industries building at Tacoma.

Proposals for furnishing 16,000 feet of 42-inch steel pipe for a water system improvement at Tacoma were opened this week. Plate tonnage involved amounts to about 1100 tons, this being the largest plate job pending in this district. Alternate bids for reinforced concrete pipe are asked. Commercial Boiler Works has booked 300 tons of plates for 40 steel oil tanks for the Shell Oil Co. Considerable work has been awarded in contracts calling for less than 100 tons each of plates.

Local fabricating plants have taken a fair amount of business in small contracts for limited amounts of steel. No jobs of more than 100 tons each were let this week. The General Construction Co. has been awarded the contract for building a steel span over the Sauk river, Snohomish county, requiring 214 tons of shapes. The subaward has not been announced. Bids will be opened March 10 at Victoria, B. C., by the minister of public works for constructing the Fraser avenue bridge, Vancouver, including concrete piers and several spans. Mill prices are steady at 2.35c.

Finished Materials

The wholesale jobbing trade recorded a slight improvement this week, due to improved weather conditions. Light plates and shapes, bars, angles are in better demand. Prices are unchanged.

Seattle has purchased through R. C. Polk, local representative, six sluice gates for the Lake Youngs aqueduct which will be furnished by the Colwell-Wilcox Co., Newberg, N. Y., requiring 100 tons of steel. For the same project six traveling water screens were ordered from the Chain Belt Co.

Pipe Demand Is Strong

Demand for cast iron pipe includes probably a dozen municipal jobs in the Northwest. The largest inquiry is for 3675 tons of various sizes for Portland, Oreg., bids to be opened March 11. American Cast Iron Pipe Co. has closed for furnishing 300 tons of pipe for Vancouver, Wash., and 250 tons of 12 to 24-inch for Salem, Oreg. An award of 125 tons of 4 to 8-inch pipe at Tacoma went to contractors who will furnish French pipe. Richmond, B. C., has opened bids for 115,000 feet of 4 to 8-inch specially wrapped steel pipe, said to total about 2000 tons. British steel will be purchased. C. W. Devilbliss, Oakland, Calif., has the contract at $101,655 for furnishing the Oregon-Washington Water Service Co. a filtration plant for its system at Salem, Oreg.

Old Materials

Steel scrap, while unchanged in price at local mills, $10 and $11 gross, is slightly weaker, enabling buyers to make better selections. Receipts are somewhat in excess of consumption.

Sheet Mill Wages Steady; Bar Mill Reduced

Wages of workers in independent sheet tin plate mills will remain unchanged for March and April, it was determined at the bimonthly meeting of representatives of the mills and Amalgamated Association of Iron, Steel and Tin Workers in Youngstown, O., March 3. They are 27 per cent above base. Average of sales prices of Nos. 26, 27 and 28 gage black sheets for January and February was 3.05c, for the fourth consecutive period. Following is a comparison of price averages:

Jan.-Feb., 1930	3.05c	unchanged
Nov.-Dec.	3.05c	unchanged
Sept.-Oct.	3.05c	unchanged
July-Aug.	3.05c	unchanged
May-June	3.65c	+1.5 per cent
March-April	3.00c	unchanged
Jan.-Feb., 1929	3.00c	unchanged
Nov.-Dec.	3.00c	unchanged
Sept.-Oct.	3.00c	unchanged
July-Aug.	3.00c	unchanged
May-June	3.00c	unchanged
March-April	3.00c	unchanged
Jan.-Feb., 1928	3.00c	unchanged

Bar mill wages for Amalgamated workers will be reduced in March and April owing to the fact the average price of bar iron sold in January and February was 1.95c per pound, compared with 2.00c in the preceding period. This is the first reduction in bar mill wages since November-December, 1927. Puddlers will receive $11.55 a ton, instead of $11.80, which will make a difference of about 25 cents a day for them. Following is a comparison of price averages for the periods designated:

	1930	1929	1928	1927
Jan.-Feb.	1.95c	2.00c	1.85c	1.95c
March-April		2.00c	1.90c	1.95c
May-June		2.00c	1.90c	1.95c
July-Aug.		2.00c	1.95c	1.90c
Sept.-Oct.		2.00c	2.00c	1.85c
Nov.-Dec.		2.00c	2.00c	1.85c
Yearly average		2.00c	1.933c	1.908c

Foundry Output Gains

Cleveland, March 4.—Production of finished castings from 128 foundries for January was 22,722 tons, in comparison with an average monthly production during the past three years of 25,673 tons, or a ratio of 88.5 per cent of normal. Foundries in the New England district were at 90.3 per cent with a production of 6208 tons; all other states east of the Mississippi river made 9705 tons, or 89.1 per cent; and all west of the river were at 90.9 per cent with 7196 tons turned out. Gray Iron institute, Terminal Tower building, reports these figures.

It is claimed that the first angle iron rolled in the United States was rolled by Samuel Leonard at the Union Rolling Mill, located on the Monongahela river, Pittsburgh.

Plate Orders Increase

Washington, March 4.—New orders in January for fabricated steel plates were 62.9 per cent of capacity, comparing with a low of 29.9 per cent for December, 1929. Orders were at 49,468 tons, the highest since March, 1929, according to department of commerce figures based on reports from 48 firms. Figures for new orders by the principal classes follow:

1929	Total	Oil storage tanks	Gas holders	Blast furnaces	Stacks & miscellaneous
January	*32,805	11,055	2,018	325	11,567
February	58,684	16,093	6,356	95	18,468
March	*57,628	21,951	5,656	631	15,274
April	*42,063	9,984	2,483	2,462	23,169
May	*47,715	10,087	5,300	1,245	26,118
June	45,918	6,890	5,444	1,003	26,200
July	48,968	14,963	5,352	2,650	20,988
August	39,702	11,150	3,317	115	19,341
September	41,653	15,189	3,353	200	16,123
October	32,099	8,786	985	853	15,766
November	42,295	9,033	1,857	1,019	14,601
December	*23,535	3,669	549	1,529	13,166
Total (year)	*513,065	138,850	42,670	12,127	220,781
1930					
January	49,468	7,432	2,868	1,042	14,560

*Revised.

Babbitt Sales Show Rise

Washington, March 4.—Apparent consumption of babbitt for January showed a considerable rise over December, 1929, but was lower than January, 1929. Consumption by producers is off, but manufacturers' sales exhibited a gain. Department of commerce figures, with some revisions, follow:

(Figures given in pounds)	Total apparent consumption	Sold by manufacturers	Consumption by producers
January	6,093,267	4,876,506	1,216,761
February	5,720,243	4,695,669	1,024,574
March	6,465,613	5,171,047	1,294,566
April	6,046,445	4,857,258	1,189,187
May	5,478,697	4,248,662	1,230,035
June	5,927,907	4,820,953	1,106,954
July	5,360,711	4,047,887	1,312,824
August	5,432,597	3,997,427	1,435,170
September	5,225,004	3,887,599	1,337,405
October	5,518,851	4,007,260	1,511,591
November	4,522,034	3,205,689	1,316,345
December*	3,343,492	2,394,159	949,333
Total (year)*	65,134,861	50,158,760	14,976,101
1930			
January	4,438,455	3,549,408	889,047

*Revised.

Discuss Direct Selling

Charles M. Schwab, president of the American Iron and Steel institute, will appoint a special committee of the institute to confer with a similar committee of the Institute of Scrap Iron and Steel Inc. on direct dealing between scrap consumers and producers and other matters of mutual concern, according to Benjamin Schwartz, director general of the Institute of Scrap Iron and Steel.

Pig Iron

(*Concluded from Page* 107)

ments to the automotive industry show no improvement. All makers report the daily rate in February was larger than in January, all consumers considered. Cleveland business has dwindled. The market for outside shipment continues $18 to $18.50, base, Cleveland, and $19, base, for local delivery. The lake furnace price in northern Indiana and Michigan remains $19.50 to $20, base.

Cincinnati, March 4.—Sales of pig iron fell off sharply in this district the past week, being less than 3000 tons. During February bookings were about 30,000 tons. An Indiana melter is in the market for 500 to 1000 tons, and a northern Indiana melter will need 1000 tons. Southern iron continues available at a minimum of $13, base, Birmingham.

Chicago, March 4.—Prices of pig iron for second quarter have been reduced 50 cents a ton to $19.50, base, Chicago furnace. Tonnages are being booked at the new prices, but no marked increase in buying has developed. The reduction is said to follow recent cuts at Detroit and Cleveland. Whether the reduction here will affect negotiations by middle interests for outside iron to be shipped this year by boat remains questionable. Sales in the past few days have been above the February average. March tonnage on books slightly exceeds the current rate of production. Steadier buying for second quarter is expected in the next 30 days.

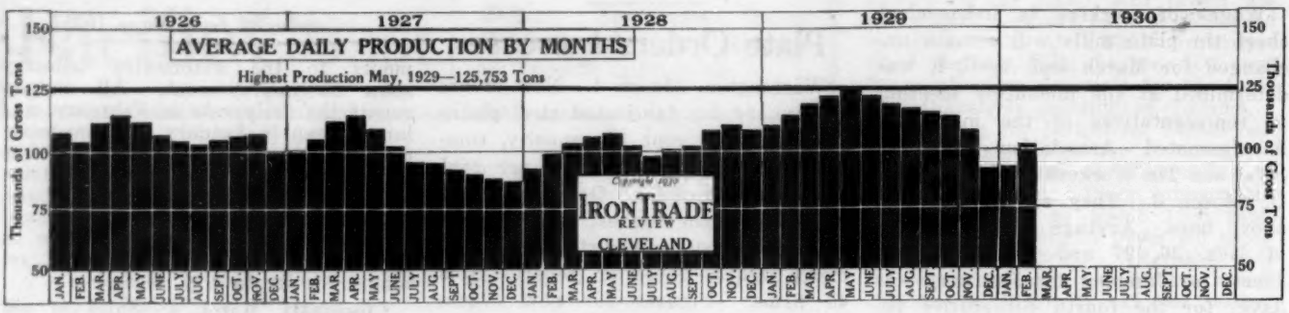
St. Louis, March 4.—Shipments of pig iron in February to consumers in this district were larger than in January, though not as large as in February, 1929. New buying continues in fair volume, sales reported in the past week aggregating 12,000 tons, including 5000 tons to a local steelmaker. The melt continues to expand gradually. A number of jobbing foundries have obtained substantial contracts for castings for the automotive industry. Prices are slightly firmer.

Birmingham, Ala., March 4.—With the output of pig iron for March fairly well covered, furnace interests await purchasing for second quarter. Considerable iron is due melters on orders placed during the past four weeks. Instructions for immediate delivery are more numerous. Extension of the low combination water and rail rates to the East until Sept. 30 will give furnaces an opportunity to move their stocks. The melt here is increasing. Prices are unchanged.

Toronto, Ont., March 4.—Merchant pig iron sales for the past week or ten days reached the highest tonnage so far this year. Melters are buying for immediate requirements and also for delivery to the end of March. Books have not been opened for second quarter. Prices are steady.

The design of beams and girders in a practical way began with the researches of Eaton Hodgkinson in 1822.

Pig Iron Rate Gains 10.9 Per Cent



PIG IRON production in February continued the improvement which developed in January following the seven-month slump which set in last June. February's daily rate was 101,640 gross tons, compared with 91,573 tons in January and 114,942 tons last February. Although February had three fewer working days than January, the month's total of 2,845,927 tons topped the 2,838,751 tons of January.

To a marked degree this 10.9 per cent increase in the daily rate of February was due to the blowing-in of so many blast furnace stacks late in January. Of the 17 stacks lighted in January, the majority of them were put in operation during the last half of the month.

February developed a net gain of six stacks, making 179 in blast Feb. 28 out of 314 potential stacks in the United States. In February two merchant stacks were lighted and two were dropped; seven steelworks stacks were added and one was blown out.

February production included 535,834 tons of merchant and 2,310,093 tons of nonmerchant iron and 26,194 tons of ferromanganese and spiegeleisen. On the basis of a national pig iron capacity of 50,367,665 tons, February's output was 73.7 per cent of capacity, compared with 66.4 per cent in January and 83.3 per cent in February, 1929.

Merchant stacks lighted in February included one each by the Sloss-Sheffield Steel & Iron Co. and the M. A. Hanna Co.; merchant stacks were blown out by the Lavino Furnace Co. and the Reading Iron Co. The only steelworks stack blown out in February was by the Jones & Laughlin Steel Corp. at Aliquippa, the corporation lighting one at its Eliza furnaces. Steelworks stacks were also lighted by the Illinois Steel Co., American Rolling Mill Co., Central Alloy Steel Corp., Republic Iron & Steel, Co., Corrigan, McKinney Steel Co. and National Tube Co., the latter blowing in its No. 1 Monongahela stack Feb. 19 after a complete relining.

MONTHLY PRODUCTION

	1930	1929	1928	1927
Jan.	2,838,751	3,433,028	2,855,515	3,101,346
Feb.	2,845,927	3,218,376	2,898,668	2,940,604
Total 2 mos.	5,684,678	6,651,404	5,754,183	6,041,950
Mar.		3,709,518	3,199,175	3,482,107
April		3,663,167	3,181,975	3,424,377
May		3,898,344	3,292,790	3,391,067
June		3,715,104	3,082,340	3,089,726
July		3,782,511	3,072,711	2,954,625
Aug.		3,746,198	3,136,995	2,950,674
Sept.		3,496,454	3,063,593	2,782,500
Oct.		3,588,146	3,373,539	2,812,015
Nov.		3,182,420	3,304,656	2,661,863
Dec.		2,836,917	3,369,784	2,698,208
Total		42,270,183	37,831,741	36,289,112

RATE OF OPERATION

(Relation of Production to Capacity)

	1930	1929†	1928*	1927‡
January	66.4	80.3	67.8	71.2
February	73.7	83.3	73.6	74.7
March	.....	86.7	76.1	79.8
April	.....	88.7	78.0	81.2
May	.....	91.1	78.3	77.7
June	.....	89.8	76.0	73.2
July	.....	88.4	73.2	67.7
August	.....	87.3	74.4	67.6
September	.....	84.5	75.2	65.9
October	.....	83.9	79.3	64.5
November	.....	76.9	81.1	63.0
December	.....	66.3	80.2	61.8

†Based on capacity of 50,367,665 tons as of Dec. 31, 1928. *Based on capacity of 49,605,720 tons. ‡Based on capacity of 51,379,400 tons. Capacities computed by American Iron and Steel institute.

AVERAGE DAILY PRODUCTION

	1930	1929	1928	1927	1926
Jan.	91,573	110,742	92,113	100,043	107,039
Feb.	101,640	114,942	99,954	105,021	104,423
Mar.	.....	119,662	103,199	112,326	111,554
Apr.	.....	122,106	106,066	114,146	114,627
May	.....	125,753	106,219	109,388	112,187
June	.....	123,837	102,745	102,991	107,749
July	.....	122,016	99,120	95,311	104,021
Aug.	.....	120,845	101,193	95,183	103,249
Sept.	.....	116,548	102,120	92,750	105,442
Oct.	.....	115,747	108,824	90,710	107,555
Nov.	.....	106,081	110,155	88,728	107,933
Dec.	.....	91,513	108,702	87,039	99,651
Ave.	96,351	115,808	103,365	99,422	107,126

DIVISION OF PRODUCTION

	Merchant	Non-merchant	Spiegel and ferro-manganese
1929			
Jan.	744,448	2,688,580	37,210
Feb.	665,648	2,552,728	34,419
Mar.	740,966	2,968,552	37,997
Apr.	740,311	2,922,856	44,406
May	772,014	3,126,330	35,598
June	716,715	2,998,389	43,218
July	741,622	3,040,889	41,137
Aug.	682,048	3,064,150	40,527
Sept.	643,197	2,853,257	38,038
Oct.	739,060	2,849,086	39,640
Nov.	737,591	2,444,829	37,328
Dec.	661,343	2,175,574	40,375
Total	8,584,963	33,685,220	469,893
1930			
Jan.	612,406	2,226,345	32,761
Feb.	535,834	2,310,093	26,194

FEBRUARY PIG IRON PRODUCTION

	No. in blast last day of month		Total tonnage made		Totals	
	Feb.	Jan.	Merchant	Nonmerchant	Feb.	Jan.
Ohio	40	37	106,455	525,410	629,865	610,786
Pennsylvania	58	58	104,565	800,158	904,723	916,804
Alabama	17	16	105,112	119,900	225,012	231,037
New York	13	12	77,758	95,527	173,285	180,508
Illinois	17	17	96,274	199,925	296,199	301,306
Colorado	3	3				
Indiana	15	14				
Maryland	5	5	4,807	452,680	457,487	419,374
Virginia	1	2				
Wisconsin	0	0				
Kentucky	1	0				
Massachusetts	1	1				
Tennessee	0	0	12,307	56,412	68,719	72,512
Utah	1	1				
West Virginia	2	2				
Michigan	3	3				
Minnesota	2	2				
Missouri	0	0	22,404	42,039	64,443	73,713
New Jersey	0	0				
Spiegel and ferro—all states	....	....	6,152	20,042	26,194	32,761
Total	179	173	535,834	2,310,093	2,845,927	2,838,751

Exports, Imports Show Mixed Trend

January Exports in Turn Upward—Continued Decrease in Imports—

Pig Iron Imports Off—Rise in Export of Scrap

UNITED STATES export trade in iron and steel products took a decided turn upward in January, after two months of steady decline, to bring the shipments for that month up to 225,090 gross tons. This improvement is the second since July, a rise in October also being noted. The gain is also significant in that it coincides with improvement in the position of the domestic industry, indicated by increased furnace activity and production. The increase in the

IMPORTS AND EXPORTS

Gross Tons

	—1930—		—1929—	
	Imports	Exports	Imports	Exports
Jan.	42,314	225,090	54,793	274,296
Feb.	.....	.....	58,146	259,711
March	.....	.....	52,747	270,925
April	.....	.....	54,337	277,580
May	.....	.....	74,272	261,516
June	.....	.....	63,635	247,811
July	.....	.....	71,378	270,532
Aug.	.....	.....	83,969	242,856
Sept.	.....	.....	60,974	222,408
Oct.	.....	.....	63,226	247,646
Nov.	.....	.....	54,041	241,829
Dec.	.....	.....	47,486	215,242
Total	.....	.....	739,004	3,032,352

January export trade amounted to 9848 tons and resulted principally from increases in the trade in scrap iron and steel, fabricated shapes and steel bars. However, the month's import trade took an opposite trend and was less by 5172 tons, total for the month being only 42,314 tons. A fall in the trade in pig iron lay behind this reduction although a decline was quite general in individual products, states the iron and steel division, department of commerce, Washington.

The January export trade presents a picture of conflicting tendencies. Twenty-one classes of products showed increased shipments and a like number experienced reduced trade. General shipments of semifinished products gained, with the trade in the finished items losing ground, but there were many products contrary to this general trend. Gains were shown in pig iron with 5392 tons, fabricated shapes with 5173 tons, steel bars having 3589 tons and skelp with 3118 tons. Outstanding losses are shown in rails having 4157 tons, black and galvanized welded pipe with 2817 tons and barbed wire at 1980 tons.

Scrap with a total of 61,865 tons was easily the principal item in the January export trade. Japan took 23,275 tons, Canada 12,487 tons, and Spain 10,216 tons. The next product in line was tin plate, with total shipments amounting to 25,026 tons, Japan, China and Argentina being the chief purchasers. Other major classes of material in this trade were plain structural shapes, with Canada quite the chief market, as well as for black sheets. Chile and Japan came in for their share in the latter product. The best markets for steel bars were found in Canada and the United Kingdom.

Canada was the principal purchaser of the month, taking 73,340 tons, with scrap, plain shapes, and boiler and other plate the principal products in a widely diversified list. Japan required 39,010 tons, of which scrap, tin plate, and wire rods were prominent. Spain rose to third position with a total of 10,313 tons, most of which was 10,216 tons of scrap, while black sheets and scrap made up the major part of Chile's 9236 tons. Mexico bought a total of 9114 tons of a great variety of products, outstanding among which were fabricated structural shapes and tin plate. Most of Italy's 8487 tons was in scrap, with a total of 7091 tons. Exports of iron ore rose from 2398 tons in December to 9249 tons in January, the entire shipments during the last named being to Canada.

For the third time in as many

ORIGIN OF FERROMANGANESE IMPORTS

Gross Tons

From	January	December, 1929
Germany	22	.....
Norway	33	817
United Kingdom	1,957	1,678
Canada	2,168	734
Total	4,180	3,229

ORIGIN OF MANGANESE IMPORTS

Gross Tons

From	January	December, 1929
Germany	16	8
United Kingdom	12	.....
Canada	5	.....
Soviet Russia in Europe	21,815	247
Brazil	10,396	9,392
British India	2,080	2,860
Gold Coast	3,827	2,800
Java	339	.....
Total	38,490	15,302

ORIGIN OF IRON ORE IMPORTS

Gross Tons

From	January	December, 1929
Sweden	13,501	22,108
Canada	.....	59
Cuba	49,000	51,000
Chile	187,114	186,438
Algeria & Tunis	30,520	21,450
Australia	5,000	5,000
Spain	7,700	.....
Total	292,835	286,055

ORIGIN OF PIG IRON IMPORTS

Gross Tons

From	January	December, 1929
Netherlands	353	3,760
Norway	147	307
Sweden	535	260
United Kingdom	2,158	4,002
Mexico	3	.....
British India	5,884	8,798
Canada	.....	45
Total	9,080	17,172

ORIGIN OF IMPORTS

Gross Tons

	Ingots, blooms, etc.	Steel scrap	Cast iron pipe	Steel bars
Belgium	708	.....	637	594
France	673	.....	309	333
Germany	256	43	.....	394
Canada	14	3,772	.....	.....
Sweden	132	.....	.....	827
United Kingdom	2	2	6	104
Austria	.....	.....	.....	7
Czechoslovakia	.....	.....	.....	35
Norway	.....	.....	.....	5
Italy	.....	191	.....	.....
Cuba	.....	47	.....	.....
Totals	1,785	4,055	952	2,299

IMPORTS OF IRON AND STEEL PRODUCTS INTO THE UNITED STATES

(In Gross Tons)

Item	January 1930	Dec. 1929	January 1929
Pig Iron	9,080	17,172	16,108
Ferromanganese and alloys (1)	4,180	3,229	5,502
Ferrosilicon (2)	469	453	446
Ferrochrome (3)	45	48	28
Scrap	4,055	1,759	7,207
Steel ingots, blooms, billets, etc.	1,785	1,705	1,717
Steel bars	2,299	2,805	3,134
Iron bars	115	319	239
Wire rods	944	1,039	1,183
Hoops, bands and scrolls	708	1,563	1,182
Boiler and other plate	657	....	73
Sheets, skelp and sawplate	2,056	2,540	827
Tin plate	9	19	41
Structural shapes	8,950	8,243	9,470
Rails and splice bars	599	199	71
Cast iron pipe	952	975	2,760
Other pipe and tubes	3,264	3,020	2,659
Barbed wire	377	544	285
Round iron and steel wire	447	476	602
Flat wire and strip steel	209	154	149
Wire rope and strand	297	222	133
Other wire	55	63	41
Nails, tacks and staples	595	740	708
Bolts, nuts, rivers, and washers	26	74	18
Castings and forgings	141	125	210
Total	42,314	47,486	54,793

(1) Manganese content. (2) Silicon content. (3) Chromium content.

months imports into the United States of iron and steel products declined in comparison with the total of the month preceding. Fourteen classes of products contributed to the 5172-ton reduction, against ten which indicated increased trade. However, the changes in general which marked the January from the December, 1929, trades were in small amount, the only exceptions being the 8092 drop in receipts of pig iron and the 2296-ton gain in scrap imports. Pig iron was the chief item in the January trade, most of the 9080-ton total coming from India and the United Kingdom. Structural shapes were a close second, 8950 tons of this product coming from Belgium, Germany and France largely. Ferromanganese imports totaling 4180 tons were drawn from Canada and the United Kingdom, and Canada was the chief contributor of the 4055-ton scrap item received.

Belgium led all suppliers with a total of 9966 tons, due largely to large shipments of structural shapes. German shipments of 7545 tons were featured by large tonnages of "other" pipe, sheets, and structural shapes, while scrap and ferromanganese were the outstanding items in the 6831-ton trade with Canada. The import trade in iron ore continued its increase, mounting to a total of 292,835 tons in January, compared with 286,055 tons in December. In the former month 187,114 tons were drawn from Chile, 49,000 tons from Cuba, and 30,520 tons from Algeria and Tunis.

Exports of Metalworking Machinery

(In number except where otherwise specified)

	January		Six months ending December	
	1930	1929	1929	1928
Engine lathes	58	72	432	380
Turret lathes	33	46	240	205
Other lathes	93	63	459	490
Vertical boring mills and chucking machines	27	36	70	57
Thread-cutting and automatic screw machines	90	107	577	378
Knee and column type milling machines	44	41	307	146
Other milling machines	125	65	304	310
Gear-cutting machines	42	33	186	212
Vertical drilling machines	81	36	180	245
Radial drilling machines	3	10	79	52
Other drilling machines	281	287	1,184	814
Planers and shapers	45	51	222	172
Surface grinding machines	26	.....	172	.....
External cylindrical grinding machines	51	88	415	475
Internal grinding machines	26	45	218	212
Tool grinding, cutter grinding, and universal grinding machines	224	85	575	402
Pneumatic portable tools	1,964	1,817	12,446	11,058
Chucks for machine tools	2,444	2,432	10,589	12,269

EXPORTS OF IRON AND STEEL PRODUCTS FROM THE UNITED STATES

(In gross tons)

Item	Jan. 1930	Dec. 1929	Jan. 1929
Pig iron, not including ferro-alloys	2,133	1,618	3,769
Ferromanganese and spiegeleisen	125	83	168
Scrap	61,865	56,473	50,753
Ingots, blooms, etc	3,329	784	1,901
Iron bars	231	221	1,311
Steel bars	11,857	8,268	22,406
Alloy steel bars	1,041	1,277	1,785
Wire rods	3,481	3,056	4,411
Plates	10,061	11,305	17,385
Skelp	4,754	1,636	2,819
Iron sheets, galvanized (1)	705	12,078	16,423
Steel sheets, galvanized (1)	10,449	9,365	13,465
Steel sheets, black	12,959	1,205	1,003
Iron sheets, black	1,217	5,207	6,891
Hoops, bands, and strip steel	3,323	24,522	26,387
Tin plate, terneplate, etc	25,026	14,841	27,259
Structural shapes, not fabricated	14,109	5,848	10,742
Structural shapes, fabricated	11,021	....	....
Tanks, complete and knocked down (2)	1,245	470	574
Metal lath	407	10,034	17,883
Steel rails	5,877	2,954	2,627
Rail fastenings, switches, frogs, etc	1,669	1,918	1,524
Boiler tubes	1,478	6,983	16,330
Casing and oil line pipe	7,742	1,232	1,135
Malleable-iron screwed pipe fittings	1,495	1,008	722
Cast-iron screwed pipe fittings	636	1,986	513
Cast-iron pressure pipe and fittings	1,055	616	1,022
Cast-iron soil pipe and fittings	1,301	15,278	10,344
Black and galvanized welded iron pipe (3)	2,801	3,275	3,845
Black and galvanized welded steel pipe (3)	9,660	4,397	6,529
Plain wire	2,891	113	152
Barbed wire and woven wire fencing	2,414	375	620
Woven wire screen cloth	187	63	163
Wire rope	412	630	926
Insulated wire and cable, iron or steel	44	806	1,498
Other wire and manufacturers	888	587	836
Wire nails	517	55	58
Nails, other than wire	591	1,479	1,411
Tacks	43	697	1,181
Bolts, nuts, rivets, etc., except railway	1,122	503	1,444
Iron castings	664	1,177	2,818
Steel castings	606	9	21
Car wheels and axles	908	710	1,242
Horseshoes	3		
Forgings	748		
Total	225,090	215,242	274,296

(1) and (3) Combined prior to 1930
(2) Heretofore shown in a miscellaneous classification

DESTINATION OF IRON AND STEEL EXPORTS

(In gross tons)

Country of Destination	Jan. 1930	Dec. 1929	Jan. 1929
North & Central America & West Indies	91,867	82,329	120,136
Canada & Newfoundland	73,411	61,312	90,453
Cuba	3,459	4,663	6,888
Guatemala	319	453	526
Honduras	711	385	892
Mexico	9,114	11,321	7,930
Panama	1,076	1,233	2,239
Salvador	360	177	1,689
British West Indies	1,251	1,240	5,256
Other West Indies	1,808	1,251	3,600
Other Central America	348	294	661
South America	36,315	32,957	45,260
Argentina	6,034	9,628	12,260
Brazil	4,831	6,360	5,427
Chile	9,236	3,897	5,678
Colombia	5,672	2,715	3,687
Peru	1,710	2,234	3,836
Uruguay	1,038	1,932	1,238
Venezuela	7,362	5,521	12,684
Other South America	432	670	450
Europe	30,632	16,026	36,345
France	793	634	1,244
Germany	2,652	30	2,923
Italy	8,487	6,405	14,799
Poland & Danzig	1	4	10,029
Spain	10,313	141	343
Sweden	551	196	460
Soviet Russia in Europe	430	2,543	70
United Kingdom	5,394	4,591	5,535
Other Europe	2,011	1,482	942
Far East	64,032	78,535	70,623
British Malaya	1,082	438	1,084
China	6,929	4,190	8,910
Dutch East Indies	3,119	3,754	8,149
India and Ceylon	3,354	941	1,286
Hong Kong	1,071	408	1,173
Japan	39,010	54,338	37,515
Kwantung	393	505	568
Philippine Islands	5,677	9,433	9,112
Australia	1,578	1,296	1,851
New Zealand	522	304	768
Other Asia & Far Eastern Markets	1,297	2,928	207
Africa	2,244	5,395	1,932
Union of South Africa	123	328	134
Egypt	1,964	4,977	1,746
Mozambique	136	71	22
Other Africa	21	19	30

Iron and Steel Index Up to 99 in January

Washington, March 4.—Iron and steel production index number for January was 99, compared with 117 for January, 1929 and 90 for December, 1929, taking 1923-1925 at 100, according to the department of commerce.

Nonferrous metals index for January was 106, compared with 114 for December and 124 for January last year, while in January automobile index was 102, compared with 49 for December and 150 for January last year.

Iron and steel unfilled orders for January had an index number of 90, compared with 87 for December and 86 for January last year.

Revises Mileage Order

Washington, March 4.—Interstate commerce commission has modified its report on part 6, Docket No. 17,000, iron and steel articles, as follows: "To eliminate the requirement that where both origin and destination are on a single line the rate for the actual distance must not be exceeded and to authorize observance on the rates between points within New England and New England border points as minima in constructing interterritorial rates between New England and trunk line territory over direct routes."

The first planing mill was introduced into America about 1830.

Here and There in Industry

Timely Information Which Records Developments in Various Lines of Productive Enterprise

JACKSON IRON & STEEL CO., Jackson, O., has re-elected D. D. Davis president, Edward J. Daehler vice president, John Stanley Morgan treasurer, J. W. Potter secretary. Harry Shick continues as superintendent. Directors include D. D. Davis, Oak Hill, O.; Irving Drew, Portsmouth, O.; Edward J. Daehler, Portsmouth; Daniel E. Morgan, Cleveland; Charles S. Cherrington, Columbus, O.; Benner Jones, Jackson, O.; Evan J. Davis, Oak Hill; John Stanley Morgan and Willard Potter, of Jackson.

* * *

REFINED STEEL CO., Pittsburgh, has changed its name to Refined Steel Products Co.

* * *

PORTER-CABLE MACHINE CO., Syracuse, N. Y., has appointed the Triplex Machine Tool Co., New York, its representative in the city and vicinity.

* * *

INTERNATIONAL DERRICK & EQUIPMENT CO., Columbus, O., has opened offices at 1510 Grant building, Pittsburgh. James H. Dye is district manager.

* * *

RELIANCE MFG. CO., Massillon, O., manufacturer of spring lock washers, has moved its Chicago office from 736 Peoples Gas building to 1513 Straus building. E. C. Gross continues in charge.

* * *

EDGAR T. WARD'S SONS CO., division of Columbia Steel & Shafting Co., will build a 1 and 2-story office and warehouse building at 4834-50 South St. Louis avenue, Chicago. The building is to be 125 x 240 feet.

* * *

EDWARD G. BUDD MFG. CO., Philadelphia, has elected Edward G. Budd president, Donald Alexander and William J. Meinel vice presidents, H. A. Coward secretary, Paul Zens treasurer, C. W. Messenger and Edward Dessalet assistant treasurers.

* * *

MERCOID CORP., 564 West Adams street, Chicago, manufacturer of electrical equipment, has leased from the All American-Mohawk Corp. a factory building, containing 90,000 square feet, at 4201 Belmont avenue, Chicago. The company will produce automobile controls at this plant.

* * *

EASTERN ROLLING MILL CO., Baltimore, has placed in operation two of the five continuous pack furnaces recently installed. The remaining three furnaces will be in operation by April 1. The new furnaces, which are gas-fired, replace stoker-fired furnaces.

* * *

CUTTING DIE & MACHINE CO. OF AMERICA, Worcester, Mass., has been placed in the hands of receivers on petition of creditors. The court has named as receivers O. M. Savels, treasurer of the company, and Antin Schneider, works manager of Reed Prentice Corp.

* * *

MODERN TOOL WORKS, Rochester, N. Y., has appointed Thompson Tool & Supply Co., Indianapolis, its representative in that territory. George H. Diers, 2514 McMicken avenue, Cincinnati, has been appointed its representative in that area. The company is a division of the Consolidated Machine Tool Corp. of America.

* * *

SWEET'S STEEL CO., Williamsport, Pa., has elected Daniel F. Swartz president, William P. Beeber vice president, Charles C. Steel vice president and manager of sales, John E. Spotts treasurer, and Clarence L. Peaslee secretary. Joseph Kaye is chairman of the board. These officers, except Mr. Spotts, form the board of directors.

* * *

MORRISON BRASS CORP. LTD., Toronto, Ont., has been incorporated as a holding company and has taken over the entire capital stock, assets and concerns of the James Morrison Brass Mfg. Co. Ltd., Toronto. The latter will continue as the operating unit. A number of well-known industrialists of Toronto and Montreal have become interested in the new company.

* * *

WESTINGHOUSE ELECTRIC & MFG. CO., East Pittsburgh, Pa., has been awarded a contract by the Carpenter Steel Co., Reading, Pa., for the major part of the equipment required to electrify its merchant bar mills. This equipment consists of six direct current motors, two generator sets and the switching and control apparatus. The new equipment will eliminate the half-mile carry of steam across the Schuylkill river.

* * *

R. C. MAHON CO., steel fabricator, Detroit, reports net profit for 1929 was $292,268 after all charges, equal, after preferred dividends, to $2.26 per share on 95,000 shares of common stock outstanding. This compares with $369,859 in 1928, or $3.08 a share on the common. Earnings for 1929 are equal to $8.32 a share on 35,000 shares of convertible preferred stock, which pays $2.20 per share per year. The balance sheet shows current assets have a ratio of 5.5 to 1, compared with 3.1 to 1 a year ago.

* * *

BALDWIN CHAIN & MFG. CO., Worcester, Mass., and Duckworth Chain & Mfg. Co., Springfield, Mass., are in process of merging, according to announcements by officers of both companies. The new corporation, with assets of more than $2,000,000, will be known as the Baldwin & Duckworth Corp. Frank J. Weschler, president of the Baldwin company, is to become vice president and treasurer of the new corporation, and George P. Empsall, president of the Duckworth company, will be president. The Baldwin company makes heavy chain equipment and the Duckworth company lighter and more specialized equipment.

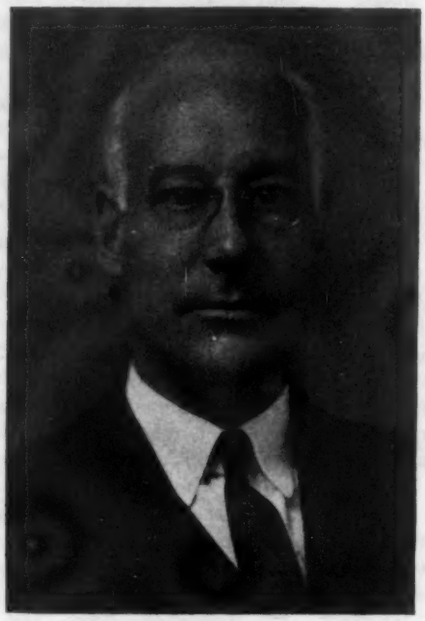
* * *

OSGOOD BRADLEY CAR CO. has been formed as a subsidiary of the Pullman Co. to take over the business of the Osgood Bradley Car Co., Worcester, Mass., and the Keith Car Co., Sagamore, Mass. The officers of the new company are: President, P. H. Joyce, Chicago, president of the Standard Steel Car Mfg. Co. of Pittsburgh; vice president and general manager, William J. McKee, Worcester, also a vice president and director of the Standard company; vice president, R. L. Gordon, New York; treasurer, B. P. Newton, Pittsburgh; sec-

(*Concluded on Page* 136)

Industrial Men in the Day's News

Prof. Bradley Stoughton, Recipient of Grasselli Medal



SEVENTH to receive the Grasselli medal of the Society of Chemical Industry, he is accorded world-wide recognition for unusual ability.

INDUSTRIAL experience from 1898 to 1902 was followed by academic work and his own consulting practice. Since 1923 he has been professor of metallurgy at Lehigh university.

HE WORKED untiringly for the 8-hour day in the steel industry. He has had three books published.

AUTHOR, educator and able engineer, Bradley Stoughton, professor of metallurgy, Lehigh university, Bethlehem, Pa., recently was accorded new recognition of his high position in the metallurgical world. The Society of Chemical Industry conferred upon him the Grasselli medal, one of the most coveted honors in the chemical industry and the seventh to be awarded.

Since he obtained his first job, which was with the Illinois Steel Co. 32 years ago, Professor Stoughton has shown a consistent and absorbing interest in all angles of the steel industry. While this interest usually has had a chemical or metallurgical twist, other departments have come in for their share of attention. For instance, he was one of the champions of the cause of the 8-hour day. He spent many months in the field gathering material. After thorough and impartial investigation he determined to his own satisfaction that the 8-hour day in the steel industry was not only feasible but also justifiable. Then he advocated it vigorously.

Born in New York, Dec. 6, 1873, he was educated at a private school in New Haven, Conn. He later entered Sheffield Scientific school, Yale university, New Haven, from which he was graduated in 1893. Three years later he also was graduated from Massachusetts Institute of Technology, Cambridge, Mass. During his academic days he had the good fortune to serve as assistant to two of America's foremost teachers of metallurgy, Prof. Robert H. Richards, Massachusetts Institute of Technology, Cambridge, and Prof. Henry Marion Howe, Columbia university, New York.

In 1898 he became affiliated with the Illinois Steel Co., South Chicago, as metallurgist, and later became chief of the cost statistical division of the American Steel & Wire Co., Cleveland. In 1901 he moved to Newark, N. J., where he became manager of the bessemer steel department of Benjamin Atha & Co. The following year, however, he returned to the academic field in order to afford himself opportunity to commence a consulting practice. He taught at Columbia university until 1908 and then for several years devoted himself almost exclusively to his consultant engineering practice. In 1913 he was appointed secretary of the American Institute of Mining and Metallurgical Engineers, New York, a position he held for ten years. In 1923 he was appointed professor of metallurgy at Lehigh university.

During his entire business and professional life he has maintained an active interest in engineering societies and in the work of other metallurgists throughout the world. His widespread interests are indicated by his exhaustive treatise on side-blown converters in steel foundry practice; by an invention covering a successful process of oil melting for cupolas, and by three books published in 1908, 1918 and 1926, i.e., *Metallurgy of Iron and Steel; Manufacture of Structural Steel,* and *Engineering Metallurgy.*

Professor Stoughton is a member of the American Institute of Mining and Metallurgical Engineers, Ameri-

can Iron and Steel institute, British Iron and Steel institute, Electro Chemical society, American Society for Testing Materials and Canadian Mining institute. He also is president of the Yale Engineering society and of the Engineers' Club of the Lehigh Valley. He resides with his family at 415 North New street, Bethlehem, where he takes an active interest in community affairs.

Walks in the open air every day furnish him with healthful exercise and these have as definite a place on his schedule as his university routine.

Men of the Industry

LAMAR S. PEREGOY, who as noted in IRON TRADE REVIEW of Feb. 20, was made president of the Sivyer Steel Casting Co., Milwaukee, and Chicago, representing the merged Sivyer Steel Casting Co., Milwaukee, and the Nugent Steel Castings Co., Chicago, was vice president and secretary of the Sivyer company for some time and general manager as well since Feb. 21, 1929. He has, however, been identified with it in various capacities since shortly after its inception. Mr. Peregoy also is a vice president of the Interstate Drop Forge Co., and a director of the Federal Malleable Co., both of Milwaukee, which are affiliated with the Sivyer company.

C. R. Messinger, formerly president of the Sivyer Steel Casting Co., is chairman of the board of the new company. Other officers follow: M. A. Fladoes, vice president in charge of sales; George L. Pollock, secretary; and C. A. MacDonald, treasurer. In addition to Messrs. Messinger, Peregoy, Fladoes and MacDonald, the following comprise the board of directors: W. C. Frye, Walter Kasten, Donald Fraser, E. L. Wood, C. F. Messinger, and C. E. Stone.

* * *

John T. Harrington, former president of the Trumbull Steel Co., Warren, O., has been re-elected president and general counsel of the Pennsylvania-Ohio Power & Light Co., Youngstown, O.

* * *

Walter R. Hamilton, of the safety and training department of the American Rolling Mill Co., Middletown, O., was appointed supervisor of production of the east side works at Middletown, effective March 1. He has been with the company for 12 years.

* * *

Earl F. Reinhart, for the past 15 years associated with the Pullman Car & Mfg. Corp., Chicago, has become affiliated with the combined Latrobe Tool Co. and J. M. Carpenter Tap & Die Co., Latrobe, Pa., as assistant to the president.

* * *

J. Marvin Doyle, formerly vice president of Colladay, Doyle & Co. Inc., New York, has been appointed associate manager of the Brooklyn, N. Y., warehouse of C. S. Davis & Co. Inc., New York, Chicago, and Pittsburgh, dealer in tin plate

LAMAR S. PEREGOY

* * *

Thomas C. Wright, formerly Philadelphia district representative of the New Departure Mfg. Co., Bristol, Conn., has become affiliated with the Worcester Pressed Steel Co., Worcester, Mass., in charge of cold-rolled strip steel sales department. He succeeds Frank C. Smith.

* * *

D. A. Birdseye, formerly western sales manager of the Lake Erie Bolt & Nut Co., Cleveland, has been appointed Detroit district manager of the recently merged interests of the Lamson & Sessions Co., Cleveland, with offices in the General Motors Building, Detroit.

* * *

Harold Whitehead, an executive of the Business Training Corp., New York, will sail for London in March to establish a similar business service of his own, which will render sales and merchandising service to companies in the export and import field on a reciprocal arrangement with the Business Training Corp.

* * *

M. C. Steffen, for five years past in the St. Louis office of Cutler-Hammer Inc., Milwaukee, manufacturer of electric control apparatus, has been made manager of the company's Cincinnati office. He succeeds R. I. Maujer, resigned. Mr. Steffen is a graduate of the University of Wisconsin and holds a B. S. degree in electrical engineering.

* * *

Lieut. Col. Sir James Lithgow was on Feb. 12 nominated as president elect of the Federation of British Industries, 39 St. James street, London, England, to succeed Lennox B. Lee, who has held the office for the past year. Sir James Lithgow with his brother, Henry Lithgow, directs what is said to be the largest private shipbuilding business in the world.

* * *

George G. Crawford, newly-elected president of the Jones & Laughlin Steel Corp., Pittsburgh, was the guest of more than 175 business men of Pittsburgh at a banquet held Feb. 25. Mr. Crawford, who for the past 22 years had been president of the Tennessee Coal, Iron & Railroad Co., Birmingham, Ala., formerly was an executive officer of the National Tube Co. and the Carnegie Steel Co., in the Pittsburgh district.

* * *

Harry B. Loder, for the past two years connected with the New York sales office of the Wrought Iron Co. of America, has been transferred to the general office at Lebanon, Pa. He will represent the company in the sale of its products in eastern Pennsylvania, the territory formerly covered by George H. Clymer, who recently was appointed district sales manager at Philadelphia, as noted in IRON TRADE REVIEW of Feb. 13.

* * *

Paul J. Kalman was elected chairman of the board of directors of the Kalman Steel Co., Chicago. George

E. Routh Jr. was elected president and A. P. Clark, vice president in charge of sales.

* * *

George H. Houston, president of the Baldwin Locomotive Works, Philadelphia, has been elected a director of the Flannery Bolt Co., Pittsburgh.

* * *

E. M. Anderson, assistant purchasing agent for many years at the Batavia, N. Y., plant of the Massey-Harris Co., Racine, Wis., has been promoted to purchasing agent. He succeeds Guy E. Down, resigned, as noted in IRON TRADE REVIEW of Feb. 20.

* * *

W. G. Ireland, formerly sales manager of the Jamison Coal & Coke Co., Greensburg, Pa., has been appointed Pittsburgh sales agent for the Keystone Coal & Coke Co., Greensburg, with offices at 610 Park building, Pittsburgh.

* * *

W. R. Angell was elected president of the Continental Motors Corp., Detroit, at a meeting of directors recently. He succeeds R. W. Judson, who becomes chairman of the board. Mr. Angell formerly was secretary, vice president and chairman of the finance committee.

* * *

John Hickey, designer of an open-feed water heater, has again become affiliated with the engineering staff of the National Pipe Bending Co., New Haven, Conn. He will have direct charge of engineering in connection with research and new product development.

* * *

C. J. La Rue, formerly assistant purchasing agent, Consolidated Steel Corp., Los Angeles, has been appointed Alan Wood Steel Co. sales representative in Los Angeles. The Seattle office, Dexter-Horton building, is in charge of Perry Francis, district sales manager. Mr. Francis was formerly with A. B. Ambler.

* * *

D. P. Downing, for the past seven years connected with the sales organization of the Bethlehem Steel Co. in San Francisco and Los Angeles, has been appointed district sales manager for the Alan Wood Steel Co. at San Francisco, with headquarters in the Rialto building by Willard S. Haring, vice president in charge of western sales, with offices in the W. M. Garland building, Los Angeles.

* * *

A. F. Preuster, for the past ten years a member of the sales and service division of the Republic Carbon Co., Niagara Falls, N. Y., has become affiliated with the International Graphite & Electrode Corp., Niagara Falls, N. Y., recently formed to manufacture graphite and carbon electrodes and electric furnace graphite. Mr. Preuster has had a wide experience during the past 30 years in electric furnace and electrolytic processes. Following an early connection with the Carborundum Co. and the Acheson Graphite Co., he was associated for more than 15 years with the late Francis A. J. FitzGerald of the FitzGerald Laboratories Inc., Niagara Falls, N. Y. This affiliation brought him into close touch with the development of electrolytic and electrothermic processes and for long he has been regarded as an authority on their theory and practice. In 1920

A. F. PREUSTER

he became identified with the Republic Carbon Co.

* * *

Frank Valtaire, formerly in charge of the foundry research division of the General Motors Corp. and a member of the works operating committee of that organization, is now identified with Egan, Webster & Co. as refractory engineer, with headquarters in the General Motors building, Detroit. Mr. Valtaire has been active in committee work of the American Foundrymen's association.

* * *

William F. Eichfeld, vice president and general manager of the A. F. Wagner Architectural Iron Works, Milwaukee, was elected president of the Milwaukee association of commerce without opposition, effective March 1. He has been vice president for the past two years and is serving also as chairman of the industries division committee, as a member of the executive committee, finance committee and board of directors.

* * *

W. E. Chollar has been appointed vice president and general manager of the Remington Cash Register Co., Ilion, N. Y., subsidiary of Remington Arms Co. Inc., New York, to succeed Paul V. Bunn, resigned. Mr. Chollar has been identified with the Remington organization for 14 years. For the past several years he has been general purchasing agent for the corporation and recently was appointed vice president of the Remington Arms Co.

* * *

B. Eggars has been appointed superintendent of the North Birmingham, Ala., blast furnaces of the Sloss-Sheffield Steel & Iron Co. to succeed John England, who resigned. Employes presented Mr. England with a watch and chain. He had been identified with the iron and steel industry of the Birmingham district for many years, having been connected with the Napier Iron Works, Napier, Tenn., Tennessee Coal, Iron & Railroad Co., Ensley, Ala., Sloss-Sheffield company, and other interests.

* * *

Charles N. Stevens, for the past six years general manager of Kenosha Boiler & Structural Co., Kenosha, Wis., has resigned to become general manager of the Milwaukee Boiler Mfg. Co., Milwaukee. The late W. D. Johnson, president of the Milwaukee concern, also served as general manager, and Mr. Stevens now succeeds him in that capacity. Mr. Stevens is a graduate of Rose Polytechnic institute, Terre Haute, Ind., in mechanical engineering.

Otto Ehbe, who has been connected with the shop for 34 years, continues as plant superintendent.

* * *

Franklin Farrel Jr., formerly vice president of the Farrel-Birmingham Co. Inc., Ansonia, Conn., manufacturer of chilled rolls, heavy machinery, etc., was elected chairman of the board of directors at the annual meeting, Feb. 20.

N. W. Pickering was elected president, to succeed Walter Perry.

D. R. Bowen, chief engineer, Carl Hitchcock, formerly assistant secretary, Franklin R. Hoadley, manager of the foundry department, and A. G. Kessler, manager of the Buffalo division, were elected vice presidents.

The following officers were re-elected: Alton Farrel, treasurer; G. C. Bryant, secretary; F. M. Drew Jr., and L. K. Blackman, assistant treasurer; and W. B. Marvin, assistant secretary.

British Steel Markets Depressed

Pig Iron Being Stocked, Scrap Prices Declining—Effort Made To Advance Galvanized—French Hematite Competing—Belgian Market Stronger

European Headquarters,
IRON TRADE REVIEW,
Caxton House, Westminster, S. W.1

LONDON, March 4.—(*By Radio*)—British iron and steel markets continue depressed. Pig iron is being stocked. Barrow presents the brightest spot in the market. Hematite made in France is competing in foreign markets. An effort is being made to fix minimum prices for galvanized sheets at £11 17s 6d ($57.82) for No. 24 gage, and £16 7s ($79.62) for No. 30 gage.

Steel scrap prices are declining. Makers of heavy steel products are getting some work in orders for chains and anchor. Exports are improving. Tin plate demand is moderately active.

The markets in Belgium are moderately active, according to IRON TRADE REVIEW'S correspondent at Brussels. Prices have been increased generally for domestic and export business and apparently have been accepted by consumers. A report from Paris states the outlook in France is favorable, though certain iron and steel consuming industries are slackening their rate of operations. The weekly report from Berlin emphasizes an improvement in exports.

British Steel Market Feels Lack of Demand

BIRMINGHAM, Eng., Feb. 24.—(*European Staff Service*)—In all British markets there still is a lack of vigor and no definite signs of a turn. Pig iron makers have sold thousands of tons and are therefore, not unduly perturbed by present unwillingness of buyers to take delivery. They believe the present depression is a passing phase and that demand will return in the spring. While there has been a good deal of talk regarding dear pig iron, the trade is now asking whether a reduction would be likely to stir the market and there is a feeling that buyers are not holding off simply because of cost of raw materials but more because of the uncertainty of the political situation.

Sterling $4.86

Speculation as to what the budget may hold in the way of fresh taxation has a depressing influence upon industry generally. At some furnaces there is some accumulation.

Furnace coke continues steady at 18s ($4.38) a ton, ovens, although buyers pay this figure reluctantly. Even if fuel could be bought at a little less it is doubtful whether concession could be made in selling prices of pig iron. Present values show a narrow margin of profit and coke now being used has cost quite 18s ($4.38) a ton.

The export trade for Middlesbrough iron is disappointingly slow, shipments for the month being about 1700 tons below those for the corresponding period of January. Dorman, Long & Co. are changing a hematite furnace at the Newport works to the production of basic iron and are transferring a basic furnace at Clarence to hematite. Fixed prices for Middlesbrough pig iron are unaltered, but customers are holding off

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, March 4	*British* Gross Tons U. K. Ports		*French* Metric Tons Channel Ports		*Belgium and Luxemburg* Metric Tons Channel Ports		*German* Metric Tons Rotterdam or North Sea Port	
Export Prices f. o. b. Ship at Port of Dispatch—By Cable								
PIG IRON		£ s d		£ s d		£ s d		£ s d
Foundry No. 3, Silicon 2.50-3.00	$17.62	3 12 6	$16.40	3 7 6	$16.40	3 7 6	$17.50	3 12 0
Basic-Bessemer	16.65	3 8 6†	15.80	3 5 0	15.80	3 5 0	16.77	3 9 0
Hematite, Phosphorus 0.02-0.05	18.96	3 18 0	24.70	630*	.....	.....	17.74	3 13 0
SEMIFINISHED STEEL								
Billets	$29.77	6 2 6	$22.84	4 14 0	$22.84	4 14 0	$22.84	4 14 0
Wire rods	41.31	8 10 0	30.38	6 5 0	30.38	6 5 0	30.38	6 5 0
FINISHED STEEL								
Standard rails	$40.10	8 5 0	$31.59	6 10 0	$31.59	6 10 0	$31.59	6 10 0
Merchant bars	1.74c	8 0 0	1.18c	5 7 6	1.18c	5 7 6	1.18c	5 7 6
Structural shapes	1.68c	7 15 0	1.12c	5 1 6	1.12c	5 1 6	1.12c	5 1 6
Plates, ship, bridge and tank	1.79c	8 5 0	1.44c	6 10 6	1.44c	6 10 6	1.44c	6 10 6
Sheets, black, 24 gage	2.17c	10 0 0	2.26c	10 5 0	2.26c	10 5 0	2.33c	10 12 0
Sheets, galvanized, 24 gage, corrugated	2.47c	11 7 6	2.52c	11 8 9	2.52c	11 8 9	2.97c	13 10 0
Bands and strips	2.17c	10 0 0	1.27c	5 16 3	1.27c	5 16 3	1.23c	5 12 0
Plain wire, base	2.06c	9 10 0	1.44c	6 10 6	1.44c	6 10 6	1.54c	7 10 0
Galvanized wire, base	3.04c	14 0 0	1.82c	8 5 0	1.82c	8 5 0	1.87c	8 10 0
Wire nails, base	2.39c	11 0 0	1.49c	6 15 0	1.49c	6 15 0	1.54c	7 0 0
Tin plate, base box 108 pounds	$ 4.56	0 18 9	.....	.....	.....	....	$ 8.99	1 17 0

*Francs

Domestic Prices at Works or Furnace—Last Reported			Francs			Francs		Marks
Foundry No. 3 Pig Iron, Silicon 2.50—3.00	$17.62	3 12 6	$19.16	490(2)	$17.58	630	$20.28	85
Basic pig iron	16.65	3 8 6	20.53	525(1)	15.62	550	21.71	91
Furnace coke	4.25	0 17 6	6.57	168	6.28	225	5.13	21.50
Billets	29.77	6 2 6	24.24	620	22.60	810	28.87	121
Standard rails	1.79c	8 5 0	1.46c	810	1.63c	1,250	1.51c	140
Merchant bars	1.74c	8 0 0	1.26c	700	1.22c	940	1.53c	141
Shapes	1.84c	8 10 0	1.26c	700	1.21c	935	1.50c	138
Plates, ship, bridge and tank	1.95c	9 0 0	1.42c	790	1.46c	1,125	1.71c	158
Sheets, black, 24-gage	2.28c	10 10 0	2.65c	1,470	2.73c	2,100	2.43c	225
Sheets, galvanized 24 gage, corrugated	2.52c	11 12 6	3.55c	1,970	3.38c	2,600	3.78c	350
Plain wire	2.06c	9 10 0	1.94c	1,075	2.15c	1,650	2.43c	225
Bands and Strips	2.17c	10 0 0	1.44c	800	1.53c	1,175	1.77c	164

*Middlesbrough; †Basic-‡delivered; (1) Basic-bessemer; (2) Longwy. British export furnace coke £0 17s 6d ($4.25) f. o. b. Ferromanganese £19 6s 0d ($93.80) delivered Atlantic seaboard, duty-paid. German ferromanganese £15 0s 0d ($72.90) f. o. b.

The equivalent prices in American currency are in dollars per ton for pig iron, coke, semi-finished steel and rails; finished steel is quoted in cents per pound and tin plate in dollars per box. British quotations are for basic open-hearth steel; French, Belgian, Luxemburg, and German are for basic-bessemer steel.

in the hope of a reduction. The hematite trade, locally and in other parts of the country, is quiet and prices are easier. The cheapness of Continental hematite reacts against the sale of Middlesbrough iron on the Continent. Blast furnace coke in the Durham district is plentiful.

In the Barrow district conditions are similar to other pig iron centers. Output is not so easily taken up as a month ago and some important buyers are refusing delivery as consumption in their works has slowed down. Continental trade is also slower but local steel plants are busy on railway and other material and for the moment are taking good tonnages. Steelworks at Barrow and Workington find a dearth of new orders and prospects of regular activity beyond a few weeks are not bright. Plate mills are pressing constructional engineers and shipbuilders for specifications, but these are not readily secured despite the fact shipyards have some important orders to execute and the railways are projecting large renewal schemes, particularly in the way of bridge building.

Midland rolling stock builders have a fair amount of work on hand for freight cars and passenger cars. There is an increasing tendency to build the all-steel vehicle not only among home lines but also abroad and steel plate mills are feeling the benefit.

In the Staffordshire finished iron trade sales of best iron bars are well maintained, an encouraging feature being the larger tonnages required for railway work. There is a good deal of idleness in other branches and prices are the subject of keen competition, crown iron varying between £10 ($48.60) and £10 10s ($51.03), according to quality. Where price is the first consideration buyers are placing business with the Continent as there is still a big margin between home and foreign iron bars.

French Exports Grow

Paris, Feb. 21.—(*European Staff Service*)—Exports of pig iron from France in November, 1929, were 50,186 metric tons, compared with 53,305 tons in October. Exports of other iron and steel products, including scrap, were 274,457 metric tons, against 227,033 tons in October. Imports of pig iron into France in November were 2681 metric tons, compared with 3170 tons in October, and imports of other iron and steel products were 16,875 tons, against 16,862 tons.

British Steel Interests Merge for More Efficient Production

LONDON, Feb. 21.—(*European Staff Service*)—Since the working agreement between the two Scottish firms, David Colville & Sons Ltd., and William Beardmore & Co. Ltd., was announced another big coal and steel fusion is expected to result from the negotiations now nearing completion between the Wigan Coal & Iron Co. Ltd., Wigan, and the Pearson & Knowles Coal & Iron Co. Ltd., Warrington. Both these concerns have their works in Lancashire.

Since the beginning of the year announcements have been made concerning three amalgamations in the coal, iron and steel industries of Great Britain.

Early in January, Guest, Keen & Nettlefolds Ltd. and Baldwins Ltd. agreed that a company be formed to take over and operate as from Jan. 1, 1930, the coke ovens, blast furnaces, steel works, and heavy steel rolling mills of the two companies, which are mainly situated at Cardiff, Dowlais, Margam, and Port Talbot.

Both firms are producers of pig iron and steel, Guest, Keen & Nettlefolds specializing more particularly in bolts and nuts, while Baldwins are known as considerable producers of sheets and tin plate.

At the end of January, the Beardmore-Colville working agreement was announced. This is not in the form of a regular merger, but is an arrangement according to which, as from Feb. 1, David Colville & Sons Ltd. have taken over William Beardmore & Co.'s entire business in steel plates, structural steel, rails and billets. William Beardmore & Co. Ltd. will continue, independently, to concentrate on the production of heavy forgings at the Parkhead plant in Glasgow. The arrangement does not involve exchange of shares or fusion of capital interests. The companies have agreed to assist each other in the interest of Scottish trade generally. Their resources will be pooled, not only as regards the technique of production, but also in buying and selling.

Finally the announcement was made Feb. 13 that a fusion scheme is expected to result from negotiations now nearing completion between the Wigan Coal & Iron Co. Ltd. and the Pearson & Knowles Coal & Iron Co. Ltd. Pearson & Knowles already are an amalgamation of the Partington Steel & Iron Co. Ltd., Moss Hall Coal Co. Ltd., Wigan Junction Colliery Co. Ltd., and Rylands Brothers Ltd. It is further to be noted that Pearson & Knowles are controlled by Armstrong-Whitworth Securities Co. Ltd., formerly known as Sir W. G. Armstrong, Whitworth & Co. Ltd.

Thus gradually the iron and steel works of Great Britain are being formed into larger units, with the object of closing down uneconomic works and concentrating production in works best equipped for that class of commodity. It is to be expected that eventually the British iron and steel industry will be composed of five or six large groups occupying strategic positions according to geographical conditions. The nuclei of three of these groups already are discernible, in Scotland, in the Middlesbrough district, and in South Wales.

Price Schedules Fixed by Steel Entente

Brussels, Feb. 21—(*European Staff Service*)—The Belgian iron and steel market continues calm. In the meantime, considerable attention is directed to the organization of selling syndicates, both domestic and international, and to negotiations taking place between these syndicates and exporting and merchant firms. The general impression is that a satisfactory outcome will result from these conversations, and that the producing firms and syndicates are ready to cooperate with merchants and exporters which offer reliable guarantees on all work taken.

An interesting point resulting from recent meetings is that the French and Germans agreed to turn down export orders for merchant bars and beams until Feb. 15, and for plates and sheets until Feb. 18, while Luxemburg producers did not quote for any of these products until Feb. 18. This decision was taken with a view to enabling Belgian works to fill their order books, since they were relatively behind the other countries. This method is destined to replace the previous one, which consisted in turning over a certain volume of orders from one country to another.

The steel entente has fixed minimum prices, for both domestic and export orders, for semifinshed steel, merchant steel, beams and plates. By the middle of the year this duty will be taken up by the new selling comptoir. The hoop and band syndicate is not yet formed. The fixed prices are as follows:

Foundry pig iron, 2.5 to 3 per cent silicon, 620 to 630 Belgian francs ($17.20 to $17.40), according to tonnage. The basic export price is £3 12s ($17.50) f.o.b. Antwerp. For basic bessemer pig iron the domestic price is 550 francs ($16.30), and the export price £3 2s ($15.10).

Blooms 140 millimeters and over will be sold at 750 Belgian francs ($20.85) in the home market, and 100 to 120 millimeters at 790 francs ($22); export price, £4 5s to £4 8s ($20.70 to $21.40); billets 800 to 810 francs ($22.25 to $22.50) domestic, £4 11s to £4 12s ($22.15 to $22.40) export; sheet bars domestic 810 to 830 francs ($22.50 to $23), export £4 11s to £4 13s ($22.15 to $22.65).

For iron bars the home price will be 940 Belgian francs ($26.15), export £5 4s ($25.30); merchant steel bars, 940 francs ($26.15) domestic, and £5 5s ($25.55) export; beams, 935 francs ($26) domestic and £4 19s ($24.10) export; hoops and bands, £5 12s 6d ($27.35); cold-rolled strip, No. 26 B. G., £10 10s ($51.10); openhearth steel bars, 1200 francs ($40); cold-rolled steel bars, rounds, 1620 francs ($45), and £9 ($43.80) for export; squares, 1700 francs ($47.30) and £9 5s ($45); hexagons, 1750 francs ($48.60) and £9 12s 6d ($46.85).

The basis price for wire nails now will be 1800 Belgian francs ($50) for domestic market, and £6 15s ($32.85) for export; bright wire, 1650 francs ($45.90) and £6 10s ($31.65); wire rod, 1050 francs ($29.15) and £6 5s ($30.40).

New Minds Gaining Leadership of German Iron and Steel Industry

BERLIN, Feb. 21.—(*European Staff Service*)—Reorganization in the German iron and steel industry has made further progress during the past few weeks. The feature has been acquisition of the controlling majority of the United Steel Works Co. by the Cologne iron magnate, Otto Wolff, and his friend, Flick, head of the Gelsenkirchen Mining Co. These two men now are the most prominent in the German iron and steel industry, but although they will fortify their position in the Vereinigte Stahlwerke group by placing some of their friends on the board of directors at the next stockholders' meeting, it is not expected that either Fritz Thyssen or Vogler will withdraw therefrom.

In the meantime the United Steel Works Co. has acquired 50 per cent of the capital stock of the Geisweid Iron Works and the Rhenish-Westphalian Steel & Rolling Mills Co. The annual report of the United Steel Works Co., recently published, announces the payment of an unchanged dividend of 6 per cent out of an almost unchanged net profit of 52,699,000 marks. The total turnover of the company last year aggregated 1,445,000,000 marks, of which 534,100,000 marks were from foreign sales, compared with 1,437,700,000 marks and 479,600,000 marks respectively the preceding year. During the past three years the company has spent more than 300,000,000 marks on the rationalization of the plant, which work was terminated last year. The Mitteldeutsche Stahlwerke Co., which is controlled by the Vereinigte Stahlwerke, last year increased its net profit from 3,790,000 marks to 4,350,000 marks, out of which a dividend of 8 per cent was paid, compared with 7 per cent for the preceding year. The Sponge Iron Co., which manufactures iron direct from ores, and which is controlled by Krupp's and the Vereinigte Stahlwerke, will commence production at the end of February at a rate of about 15,000 tons a year.

The export surplus last year thus advanced from 2,637,398 tons to 3,994,907 tons, reflecting substantial improvement.

The pig iron market is depressed. Otto Wolff has bought 2,100,000 metric tons of iron ores from Compagnie Marine et Homecourt, for delivery during the next ten years.

In foreign business, German works, in co-operation with French and Luxemburg works, withdrew from the export market until Feb. 15. December brought a slight revival of export sales, which have developed during recent months as follows, in metric tons:

Month	Imports	Exports
1929		
Sept.	148,000	470,000
Oct.	158,000	506,000
Nov.	134,000	463,000
Dec.	119,000	473,000
Year		
1929	1,818,451	5,813,358
1928	2,397,435	5,034,833

Entente Is Taking Over Control of European Export Steel Sales

LONDON, Feb. 21.—(*European Staff Service*)—Since the decision taken by the management of the steel entente in December to organize export sales by setting up syndicates for various products, numerous meetings have been held in Paris, Brussels, Luxemburg, and considerable advance has been made in the organization of the new comptoirs. Although these will not actually be in existence before the middle of the year, control of export sales aready is being put into effect under the supervision of the steel entente.

One of the great difficulties in forming the new international selling syndicates was that these could not be arrived at unless domestic syndicates existed in each country for the control of sales of each group of products. The commodities to be controlled will be grouped as follows: Semifinished products, beams, merchant bars, plates, and hoops. The constitution of domestic comptoirs for each of these commodities now is being effected in those countries where they do not already exist.

As to international negotiations, the situation is developing. The representatives of Belgium, France, Germany, Luxemburg, and the Saar have decided to control export sales as from Feb. 1, 1930, for a period of six months. This control is being exerted on tonnage as well as on prices, and it covers the five classes of products already mentioned. The merchant bar list includes rounds, squares, small angles, small U-bars, half-rounds and flats. That for plates is for plates ⅛-inch and over. Hoops also include skelp.

Each member-country is being allocated a global quota covering its sales on both domestic and export markets, and a percentage has been established between domestic and export sales. The agreement provides that each group of products shall be controlled by a committee composed of two members from each country. At the expiration date of the present convention, the volume of orders taken by the various member countries will be adjusted according to their quotas, and financial compensations will be effected. Account will be taken of the relative volume of orders between the domestic market and export markets.

The agreement embodies a clause which protects the domestic market of each member-country from incursion on the part of other members. Special committees will meet periodically and will fix minimum export prices.

Until the international selling syndicates are definitely constituted, each domestic syndicate, or, where a product is not syndicated, the individual works, can continue to sell direct to its clients in foreign markets, or to sell through the merchant firms with which it has been related. Eventually, when the comptoirs are established, the orders will be taken by the comptoirs themselves, and divided among the various members.

The French producers have themselves conducted negotiations in order to set up an organization of control in their own country. Semifinished products and beams already are handled by two syndicates. With regard to merchant bars, it has been decided that the principles embodied in the international convention shall be applied domestically with respect to quotas and minimum prices, but for the time being each works is able to conduct its own sales. The same applies to hoops and bands. With regard to plates, a regular comptoir is being formed. For products the sales of which have not yet been organized in France, it is understood that producers will be compelled to adopt the minimum prices fixed by the international convention.

Marc Seguin of Annonay, France, invented the locomotive boiler in 1828.

Obituaries

EDWARD J. LAVINO, who early in January, 1927, was elected chairman of E. J. Lavino & Co., Philadelphia, producer of ferromanganese, died in Philadelphia, March 4. He was born in Smyrna, Turkey, in 1852, where his father handled the business of the Dutch East Indies Co. He was educated in Belgium, being graduated from the Institut Superieur de Commerce, Antwerp, in 1871. After a brief experience with the Dutch East Indies Co. in Smyrna, making annual trips to the United States, in 1887 he established himself at Philadelphia as E. J. Lavino & Co. Ores and ferroalloys gradually increased in importance and his imports of chrome ore, ferrochrome and manganese ore mounted until he became the largest importer of English ferromanganese, representing three English makers in the United States. When the war cut off importations of English material he became a manufacturer of this alloy, acquiring blast furnaces in 1915 at Marietta, Lebanon, Sheridan, Pa., and Reusens, Va. These were put into blast on ferromanganese, utilizing both domestic and foreign ore. Mr. Lavino was appointed a member of the committee on ores and ferroalloys of the American Iron and Steel institute which functioned in conjunction with the war industries board during the war. His other activities included the sale of chemicals of various kinds and fluorspar as well as the manufacture and sale of chrome, silica and magnesite brick at plants at Plymouth Meeting and Womelsdorf, Pa. He also was chairman of the Lavino Furnace Co., Lavino Shipping Co., and Lavino Refractories Co.

* * *

E. D. Campbell, vice president since 1892 of Beard, Campbell & Co., Port Huron, Mich., died Feb. 4.

* * *

W. H. Baker, general purchasing agent, N. O. Nelson Mfg. Co., St. Louis, died at his home there Feb. 13 after an extended illness.

* * *

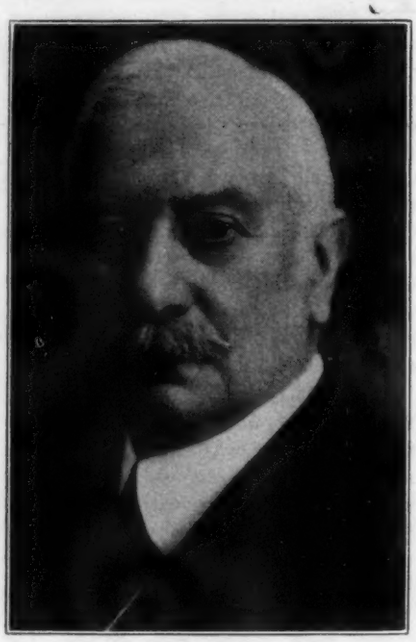
Fred H. Fitch, 60, vice president of the Kansas City Structural Steel Co., Kansas City, Mo., died Feb. 25 at his home in that city.

* * *

Oliver B. Barrows, St. Louis representative of the American Steel & Wire Co., died at his home there Feb. 18 following a heart attack. He had been connected with the company more than 40 years.

* * *

Clemens Herschel, 88, inventor of several devices which have aided the development of hydraulic engineering, died at his home in Glen Ridge, N. J., March 1, after a brief illness. Mr. Herschel was awarded the Elliott Cresson medal of the Franklin Institute of Philadelphia, for his invention of the venturi water meter for the measurement of liquids through conduits. Earlier he designed the Holyoke testing flume, said to have marked the start of scientific designing of modern water power wheels.



EDWARD J. LAVINO

* * *

John C. Bradley, chairman of the board of directors and former president of the Pratt & Letchworth Co., Buffalo, died Feb. 25 after a 2-year illness. He had been with the Buffalo company more than 30 years.

* * *

William V. Kelley Jr., 33, head of the Beverly Hills, Calif., branch of the Miehle Press & Mfg. Co., Chicago, of which his father is board chairman, died Feb. 27 in an automobile accident at Sydney, Australia.

* * *

Winter D. Hess, 64, for 13 years western sales representative, at Chicago, for Glamorgan Pipe & Foundry Co., Lynchburg, Va., and western representative of the Builders Iron Foundry and Darling Valve & Mfg. Co. almost 25 years, died Feb. 27 at his home in Evanston, Ill.

* * *

Louise J. Feltes, 43, general manager of the D. J. Ryan Foundry Co., Ecorse, Mich., died Feb. 21.

* * *

George March, 77, president of the Cincinnati Shaper Co., Cincinnati, and a pioneer in the machine tool industry, died in that city last week. At the age of 29 he formed a partnership with B. W. Flack, Baltimore, to buy the Universal Radial Drill Co., sold in 1894 to Bickford Drill Co. He founded the Cincinnati Shaper Co. four years later and remained actively at its head until three years ago. A son, Perrin George March Jr., is associated in the business.

* * *

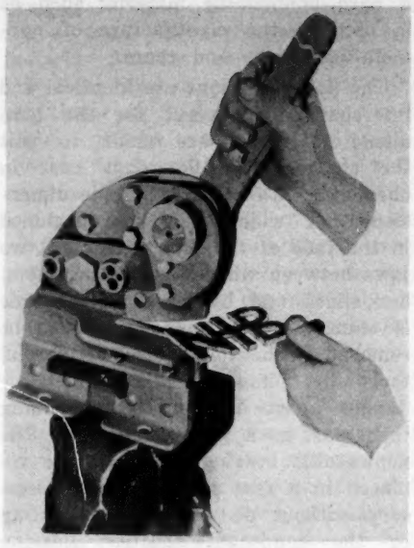
John James Amory, 73, president of the Consolidated Shipbuilding Corp., New York, builder of power boats, died Feb. 27. Born at Fond du Lac, Wis., he became affiliated in 1886 with the Gas Engine & Power Co., which later became the Consolidated Shipbuilding Corp.

* * *

Max T. Morrison, head of the tramway department of the American Steel & Wire Co., Worcester, Mass., died Feb. 27 in Charleston, W. Va., of heart disease. He had gone to Charleston earlier in the week to supervise a tramway installation. Mr. Morrison was born in Moscow, Russia, Dec. 16, 1878. He was a member of the American Society of Mechanical Engineers.

* * *

H. D. Hammond, vice president in charge of miscellaneous sales since April, 1929, for the American Steel Foundries, Chicago, died in Chicago March 1. Mr. Hammond was well known throughout the foundry industry. During his early training he spent four years in the offices of Robert Wetherill & Co., Chester, Pa., and one year with the Keystone Drop Forge Co., Chester. In September, 1906, he entered the employ of the American Steel Foundries at the Thurlow, Pa., works, and in March, 1910, was transferred to the Pittsburgh sales office. Three years later he was appointed production engineer at the Indiana Harbor works and was promoted to manager of railroad miscellaneous sales at Chicago in March, 1915. In December, 1917, he became general manager of miscellaneous sales, a position he held until his election as vice president in charge of miscellaneous sales, last year.



No. 56—Heavy-duty handnibbler

Heavy-Duty Handnibbler Affords Flexibility

No. 56

National Machine Tool Co., 1534 Clark street, Racine, Wis., has announced a new tool to be used as outside nibbler, inside nibbler, shear and rod cutter, designated as heavy-duty model No. 4. This tool, shown in the accompanying illustration, is used for nibbling out trial blanks for building sample forms, for cutting out templets and for experimental sheet forming and can be mounted in a vise or on a bench.

The notable feature of the new tool is its ability to work without difficulty flat sheets up to 3/16-inch. It will also shear flat stock up to 3/16-inch, do inside nibbling 4 inches from any outside edge and cut rods from 3/16 to ½-inch diameter. The body of the tool is made of cast steel, and all wearing parts are hardened and ground. It is of double crank construction, simplifying operation.

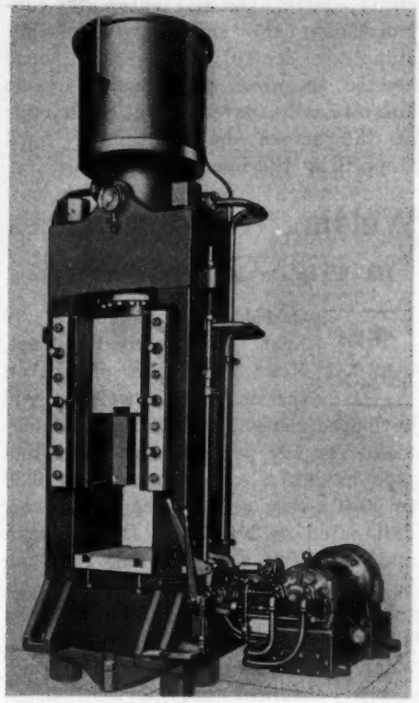
Hydraulic Press Offers Many Improvements

No. 57

Hydraulic Press Mfg. Co., Columbus, O., has developed a radically new type of hydraulic press said to combine the smoothness and economy of hydraulic operation with the production speed of the mechanical press. The press is self contained with direct-connected motor drive, and requires no outside source of pressure. The pressure fluid is a high grade of lubricating oil. The pressure is regulated automatically and full pressure developed at any point along the stroke as required. Total pressure applied to the work is indicated by a direct reading pressure gage.

Stroke May Be Regulated

An important feature of the press is the flexibility of its operation. Length of the stroke can be regulated to suit the work and dies can be changed from one press to another as the setup requires no vertical adjustments for die height or clearance.



No. 57—Self-contained hydraulic press

The press cannot be overloaded while in operation, even though extra stock is accidentally inserted and the automatic method of applying pressure safeguards the operator and prevents hammer blow shocks from damaging the dies.

The press is a multipurpose machine which can be adjusted quickly in length of stroke and setting and a new set of dies installed. It can be set for semiautomatic, or full auto-

Iron Trade Review's Calendar of New Equipment

Item	Comment	Builder	No.	Date Described	Page
Locomotives	Gasoline powered; 20, 25 and 30-ton capacity	Fate-Root-Heath Co.	31	Feb. 6	91
Hone	Vertical cylinder hone; hydraulically reciprocated spindle	Barnes Drill Co.	32	Feb. 6	91
Speed reducers	Right angle drive type; range of 15 to 1 to 518 to 1	Falk Corp.	33	Feb. 6	91
Brake control	For crane hoists, etc.; dynamic, magnetic contactor	Electric Controller & Mfg. Co.	34	Feb. 6	91
Instruments	Voltmeters, milliammeters for low power circuits	General Electric Co.	35	Feb. 6	92
Hardness tester	Motor-driven brinell-type for precision work	Pittsburgh Inst. & Machine Co.	36	Feb. 6	92
Press	Utility press for toolroom; 80,000-pound pressure	Simplex Tool Co.	37	Feb. 6	92
Grinders	Single-speed and multiple-speed types; special design	Ransom Mfg. Co.	38	Feb. 6	92
Nut	Recessed for gasket; makes leakproof joint	Columbian Steel Tank Co.	39	Feb. 6	93
Furnace	Gas-fired laboratory furnace; heats quickly	Babcock & Wilcox Co.	40	Feb. 6	93
Saw	Wood saws; two sizes, for 12x12 and 12x20-inch timber	De Walt Products Corp.	41	Feb. 6	93
Presses	Inclinable; bodies made up of welded steel plate	La Salle Machine Works	42	Feb. 20	59
Controllers	Magnetic controllers for steel mill auxiliaries; redesigned	General Electric Co.	43	Feb. 20	59
Scale	Automatic; for weighing material on conveyor belt	John Chatillon & Sons	44	Feb. 20	60
Milling machine	Also boring and drilling; flexible control	Consolidated Machine Tool Corp.	45	Feb. 20	60
Forming machines	Two types, varying in size, for roll forming strip metal	McKinney Tool & Mfg. Co.	46	Feb. 20	61
Motor-generator	Assembled and welded to welded steel plate base	Reliance Electric & Engineering Co.	47	Feb. 20	61
Chain link	Of manganese steel; for conveyor chain	American Manganese Steel Co.	48	Feb. 20	62
Drive	For bucket elevator; speed reducer and roller chain	H. W. Caldwell & Son Co.	49	Feb. 20	62
Die stocks	Plain and ratchet types; for pipe threading work	Borden Co.	50	Feb. 20	62
Grinder	Small high speed air grinder; weight 12 ounces	Madison-Kipp Corp.	51	Feb. 27	74
Welding machine	100-ampere; gas, electric or belt drive	Wilson Welder & Metals Co.	52	Feb. 27	74
Motor	Totally enclosed, fan-cooled squirrel cage induction motor	Century Electric Co.	53	Feb. 27	74
Presses	Welded assembly; heavy-duty type; all-steel	La Salle Machine Works	54	Feb. 27	75
Bearings	Ball bearings for airplane control systems	Fafnir Bearing Co.	55	Feb. 27	75
Handnibbler	For outside and inside nibbling, shearing, cutting	National Machine Tool Co.	56	March 6	133
Press	Self-contained hydraulic type; adjustable stroke	Hydraulic Press Mfg. Co.	57	March 6	133
Welding rod	Developed for welding steel pipe; self-fluxing, deoxidizing	Oxweld Acetylene Co.	58	March 6	134
Coupling	Flexible coupling with floating center member	American Flexible Coupling Co.	59	March 6	134
Shaper attachment	Double cutting head; used in cutting splines	Morton Mfg. Co.	60	March 6	134
Meters	Frequency meters of indicating type	Westinghouse Electric & Mfg. Co.	61	March 6	134
Pouring device	Handles 1000-pound ladles; all-steel construction	Modern Pouring Device Co.	62	March 6	135

matic control, the full automatic control being the same as the semi-automatic control except that, once started, the press will repeat the cycle automatically, reversing at both ends of the stroke and continuing until stopped by the operator.

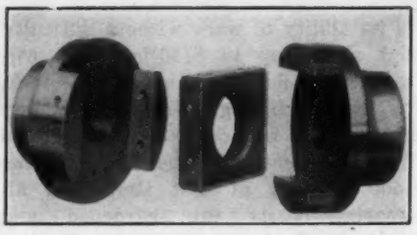
Welding Rod Specializes in High-Carbon Work

No. 58

Oxweld Acetylene Co., 30 East Forty-second street, New York, has placed on the market a welding rod developed especially to meet the demand for 100 per cent joints in steel pipe having a carbon content of 0.30 to 0.40 per cent. The new rod, designated as No. 22 S. D. (strength and ductility) steel welding rod, can be adapted to a variety of uses, although the recent popularity of the steel pipe instigated its development. In general appearance, weldability, chemical and physical properties, the new rod is said to be similar to No. 1 rod, although designed to make a stronger weld. Tests are reported to have shown tensile strengths of 100,000 pounds per square inch.

Slag Prevents Oxidation

The rod is self-fluxing and deoxidizing and sparks little. Under the welding flame, it forms a fusible slag which rises to the surface where it serves as a thin protective coating to prevent oxidation. The composition of this rod also prevents the strengthening element, carbon, from burning out during the welding operation. It has the ability to fuse easily into the base metal at both sides and the bottom of the vee. The rods are available in 3/16 and ¼-inch diameters in 36-inch lengths.



No. 59—Parts of new flexible coupling with floating center member

Floating Center Member in New Coupling

No. 59

American Flexible Coupling Co., Erie, Pa., is placing on the market a new shaft coupling of novel design. Kinematically the device is a variation of the familiar Oldham-type coupling in which a center member is constrained to slide across the face on one coupling flange on a line passing through the center and, at the same time, is free to slide across the face of the second flange in a direction at right angles to the first. The floating center member, shown in the accompanying illustration, is a square, hollow casting with a hole in the center to provide clearance for the shaft ends. To the edges of this floating member are fastened replaceable bearing strips made from a hard nonmetallic material such as is used in the manufacture of nonmetallic pinions and gears.

The flange sections are identical and interchangeable except for the bore diameters which are made to suit the shafts. The flange is cast in one piece with a hub of ample dimensions. A wide groove is machined in the face of the flange, leaving two jaws between which the floating member slides and by which the torque is transmitted. The coupling can be removed without the use of special tools by simply pulling the jaw flanges apart horizontally or sliding them past each other vertically. The nonmetallic bearing strips can be replaced in a few minutes when necessary without disturbing the coupling or the connected shafts. Bearing strip screws are removed through holes in the jaws, whereupon the old strips can be slipped out and new ones inserted.

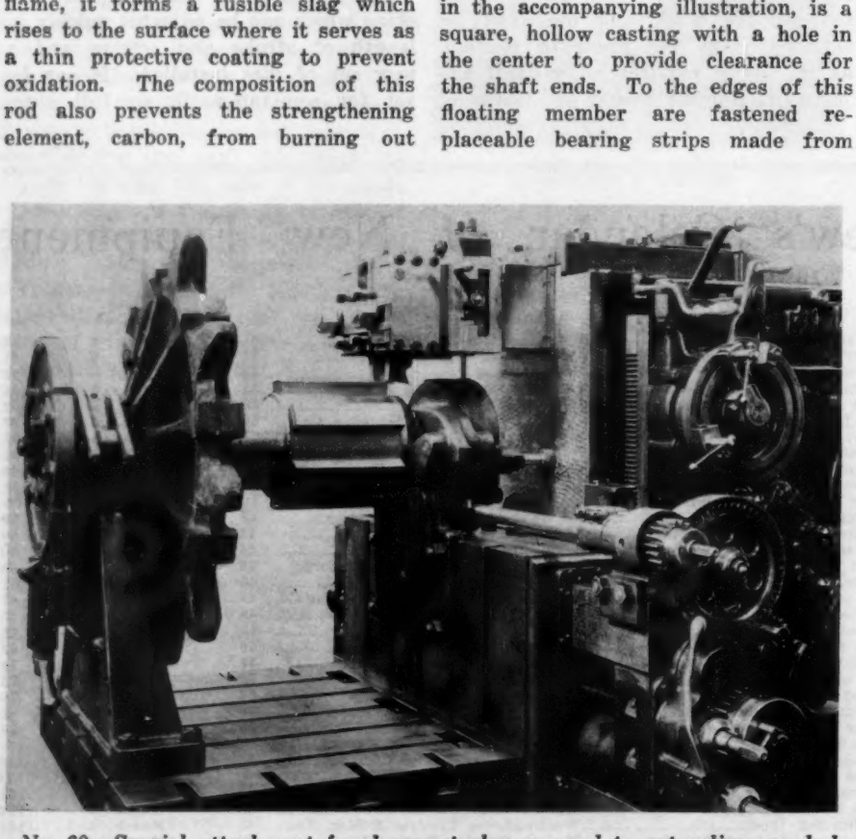
The floating hollow center member is filled with grease which passes to the surfaces of the wearing strips through suitable channels furnished with wicks.

Shaper Attachment Used To Cut Splines

No. 60

Morton Mfg. Co., Muskegon Heights, Mich., has designed a special draw-cut shaper attachment to be used in cutting splines on the hub of a cast-steel drive sprocket. The accompanying illustration shows the attachment, which is indexed and equipped with a rotary feed for circular cutting and will rotate through 360 degrees.

This work is performed on a 38-inch stroke, high-duty, draw-cut shaper which has both horizontal and vertical rapid power traverse. The illustration shows the special double cutting head in which one or two tools can be used in shaping the keys on the hub, cutting both sides of a spline at one operation. Shapers built by this manufacturer are equipped with auxiliary table, standard swivel base vise and shaper head as well as with a jib crane with a 1-ton two-speed hoist.



No. 60—Special attachment for draw-cut shaper, used to cut splines on hub of cast steel drive sprocket

Frequency Meters Are of Indicating Type

No. 61

Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., has developed a new frequency meter of the indicating type, a design that permits the production of instruments having a scale range of plus or minus 2 cycles for 60-cycle work, with op-

erating torques at least equal to those used in corresponding voltmeters. The instruments differ from the usual resonance type of ratio instruments in that a single resonant circuit of the parallel type is employed which results in a low volt-ampere burden. The circuit design is such that the change of resistance of the reactors and coils due to temperature variations produces no effect. The indication depends only on the values of inductive and capacitative reactance. Ranges obtainable are from 54 to 66 cycles or 58 to 62 cycles for use on 60-cycle systems. The narrow range scales are supplied for use on interconnected systems and applied principally to power or load dispatching. Since such an instrument is responsive to changes of 0.01 cycles, frequency changes due to the load can be observed readily.

Pouring Device Handles 1000-Pound Ladles

ITR No. 62

Modern Pouring Device Co., Port Washington, Wis., has designed a new pouring device for handling ladles up to 1000 pounds capacity. The raising apparatus of the new mechanism consists of a planetary gear system operating on the ladle supporting rack. The large operating handwheel, shown in the accompanying illustration, enables quick raising and lowering, but under precise control, so that the ladle can be spotted quickly at any desired height. The unit is of all-steel construction and all movable parts operate on roller and ball bearings. The rack rollers are bushed with self-lubricating bearing metal. Equipment includes a geared ladle with totally enclosed worm wheel operating in a continuous bath of oil. The worm operates on tapered roller bearings and has an adjustment to take up the lost motion between it and the gear after some usage. The machine also may be used for handling various loads in the foundry in place of a chain block. For work of this nature the raising rack is equipped with either a bail or a single hook at the lower end.

Soviet Russia Requires American Machinery

(*Concluded from Page* 93)

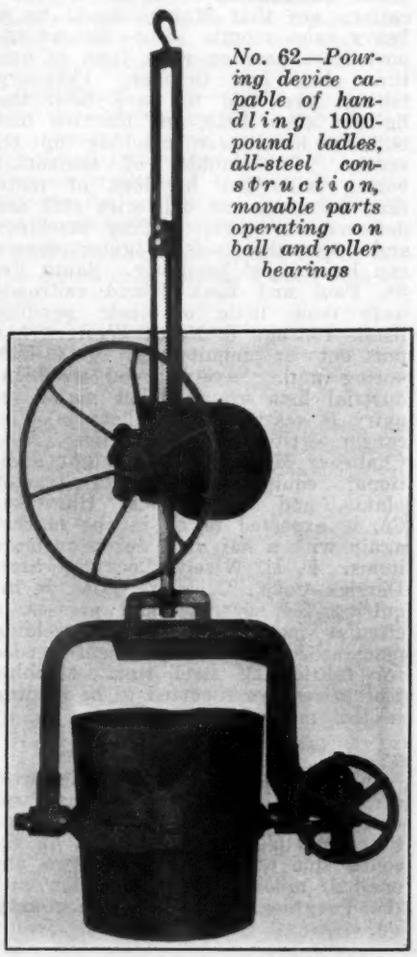
the Union Trust Co., Cleveland. In part he says:

"I must confess that we entered into negotiations with the Soviets with some misgivings. As the conversations proceeded, these misgivings gradually disappeared, until finally they were entirely replaced by feelings of a far more favorable nature. Our first doubt pertained to the gulf between our economic views. We wondered whether they could appreciate our point of view which made profitable transactions necessary. Each member of the communist party from the most lowly to the highest official, receives a monthly salary of about $125. There is no variation in this except that some of the highest government officials are allowed something to meet their extra expenses.

"The various industrial and economic activities of the government are conducted by bureaus to which are given short, descriptive names. For example the bureau with which we dealt is Autostroy, the Soviet bureau for building automobile plants. While in some of these departments many men have had industrial experience, others have not, but all appear to have reached their positions because of their ability. They are men of energy, insight, and with a rather surprising grasp of the basic problems involved. As negotiators and in their ability to plunge to the heart of a proposition and drive a good bargain, I think they compare favorably with business executives anywhere."

With regard to the trustworthiness of Soviet officials, Mr. Austin mentions an incident which occurred during the negotiations between his company and these officials:

"Toward the end of the negotiations in Moscow, a memorandum of the contract was drawn up and gone over by our representatives. An error was discovered which meant several thousand dollars to our company. Before this could be called to the attention of the Russians, they themselves announced that they had discovered the mistake and that it was being corrected. Although our representatives employed an interpreter as a check to the official Russian interpreter, there was no time when any discrepancy was noted."



No. 62—Pouring device capable of handling 1000-pound ladles, all-steel construction, movable parts operating on ball and roller bearings

Taxes Supply Funds

On the question of payments much doubt has been expressed. Mr. Austin explains the methods employed by the Soviets to obtain necessary funds:

"In a large measure the funds are to be raised by taxes, direct and indirect, and by the export of grain, petroleum, and other raw materials. Unfortunately, recently there has been some inflation in the Russian ruble and in most cases Soviets are paying for American technical service and goods in gold at New York. However, a number of large industrial companies are reported to be extending substantial credits to Russia. Our own contract calls for monthly payments of gold in this country. I have not heard of any one who has had cause to be dissatisfied with Russian payments or with Russian credit since the inauguration of the 5-year plan.

"The things Russia wants from America are technical assistance in designing and constructing industrial plants, power projects, and other large enterprises, modern industrial machinery for the production of manufactured products, tractors, and implements for the mechanization of farms, and machinery and equipment for building purposes."

Testing Society To Hold Automotive Meeting

Automotive materials will be the principal theme at the regional meeting of the American Society for Testing Materials, to be held March 19 at the Book-Cadillac hotel, Detroit. Twelve formal papers will be presented on the subject "Symposium on Developments in Automotive Materials." The technical sessions will be followed by a dinner at which will be given a demonstration of audible light through the courtesy of the research laboratory of the General Electric Co., Schenectady, N. Y. In addition to the testing society membership, local chapters of the Society of Automotive Engineers, the American Society for Steel Treating and the National Association of Purchasing Agents are participating in the meeting.

The McCormick harvester was first made and sold in 1831, although not patented until 1834.

Machinery

Look for Good Month After Poor February and in Face of Considerable Pending Work —Export Trade Continues Heavy

INDICATIONS seem to point to a good month for machinery sales, light February billings and fairly large volumes of pending work combining to make the situation a little brighter. Dealers in the Chicago territory report February sales the lightest for any month since 1928. Several western railroads have pending lists, but have not closed on them as yet. Ball bearing plants are increasing production schedules in the East. This factor and an excellent export trade, notably with Russia, are encouraging aspects of the market there. Deliveries continue delayed on special machines and heavier-type tools. Steel mills are inquiring for some machinery in the Warren and Youngstown, O., districts. Cancellations are few and prices in general are holding steady.

New York, March 4.—Machine tool orders close slowly. Inquiry holds fairly brisk, but actual business placed is limited to one and two tools at a time. With a few exceptions, the market lacks snap and is spotty. A few dealers note a moderate improvement. In some instances deliveries are inclined to lag, but standard equipment is generally back to normal. Boring equipment and special heavy built tools still are delayed. Prices are firm and few reports of cancellations have been noted.

Ball bearing plants in some cases are increasing production schedules, one in Connecticut being near capacity. The decline in buying has reflected a slowing up in orders for standard machine motors. Machine shop trade is fair with one or two units scattered for a few plant expansions. Inquiry is out for a miscellaneous number of tools for school equipment. Grinding machinery improves slowly. One builder of grinders sold eight machines to one account during the week. Export trade is good, Russia having a large list pending and another expected this month. Textile machine builders report a spotty demand. Some plant expansions and new units in the south provide the bulk of the buying for such equipment.

Worcester, Mass., March 4.—An active export trade is keeping grinders in a strong position although not materially different from the past several weeks. The failure of motor builders to hit their stride is having a weakening effect on the market. Some lines including wiremaking machinery and rolling mills report a big improvement in the past 60 days although in lathes and drills no decisive forward movement has been noted.

Pittsburgh, March 4.—The machinery markets continue quiet, February business having shown little, if any, improvement over that of January. Inquiry involves few large lists although considerable pending work remains to be placed. Westinghouse Electric & Mfg. Co. has a number of tools on inquiry while a few items were placed recently. Pennsylvania railroad has issued inquiries for six miscellaneous tools for its Altoona, Pa., shops. Carpenter Steel Co. has awarded the major part of equipment for electrification of merchant bar mills to the Westinghouse company.

Cleveland, March 4.—Some strengthening is noted in the machinery market, the outlook for March being improved. February generally was a dull month, although one interest reports twice the business in February that was booked in January. Steel mills in the Youngstown and Warren districts are reported to be in the market for some types of machinery. More activity is found in surrounding territory than in the immediate city. Deliveries are good on most machines and prices are holding firm.

Chicago, March 4.—Machine tool inquiry is showing a decided pick-up in this territory, but dealers point out that buyers are delaying closing on much outstanding equipment. Indications are that March should be a heavy sales month. Some houses report more pending work than at any time since last October. February billings are said to have been the lightest since 1928, and machine tool builders have been catching up on orders. One builder of horizontal boring mills has backlogs of more than 60 days, and deliveries still are deferred on special milling machines and a few other tools. Lighter presses can be shipped promptly. Santa Fe, St. Paul and Rock Island railroads have done little on their pending lists. Chicago & North Western has put out an inquiry for a 53-inch boring mill. Several good sized industrial lists are out, but major inquiry is scattered. Business in Wisconsin territory is more active. Allis Chalmers Mfg. Co. has bought additional equipment for its tractor plants, and International Harvester Co. is expected to be in the market again with a list of a dozen or more items. F. M. Wisely, Lockjoint Steel Derrick Corp., Cushing, Okla., is inquiring for several small presses, a circular metal saw, electric welding machine and other equipment needed for fabricating steel rigs. Machine tool prices are reported to be holding in this market.

In 1790, the first blast furnace west of the Alleghany mountains was erected by William Trunbull and Peter Marmie of Philadelphia, on the south side of Jacobs creek, two and one-half miles above its junction with the Youghiogheny, in Fayette county, Pa.

Here and There

(*Concluded from Page* 125)

retary, R. V. Chase, of Worcester.

Directors: P. H. Joyce, William J. McKee, R. L. Gordon, C. A. Liddle, president of the Pullman Car Mfg. Co.; B. P. Newton, R. V. Chase, and C. H. Turner, Worcester. The new corporations became effective March 1.

* * *

FERROUS MAGNETIC CORP., 110 Washington street, New York, has been formed and will offer service to the iron and steel industry beginning April 1. John Hoffhine is president and Dr. S. Specht chief engineer. The executive committee consists of Edward S. Moore, Wayne Johnson and John Hoffhine. The purpose of the company is to establish facilities for scientific inspection of ferrous materials. Laboratories will be equipped with magnetic, X-ray, photomicrographic, metallurgical and mechanical equipment for research, inspection, testing and development work in iron and steel.

* * *

GALESBURG COULTER-DISC CO., subsidiary of the Borg-Warner Corp., Chicago, has changed its name to the Ingersoll Steel & Disc Co. It is stated the original name no longer was descriptive of the increasing variety of the company's business. R. C. Ingersoll is president and is in charge of the plant at Galesburg, Ill. H. G. Ingersoll is vice president and manager of the Indiana rolling mill units at Newcastle, Ind. S. L. Ingersoll is manager of the Chicago rolling mills unit at West Pullman, Ill., which recently was acquired. The company produces special steel and fabricated parts for the implement and automotive industries.

CONSTRUCTION *and* ENTERPRISE

Concise, Timely Business Building Opportunities from Field of Industry

North Atlantic

BALTIMORE—Gulf Refining Co., 2117 Aliceanna street, will build a 1-story warehouse and machine shop at Childs and Frankhurst streets that will cost approximately $150,000.

ASHLAND, MASS.—Warren Telechron Co., manufacturer of electric clocks, plans a 2-story plant addition costing approximately $50,000. Architects are Fay, Spofford & Thorndike, 44 School street, Boston.

ATTLEBORO, MASS.—L. G. Balfour Co., manufacturing jewelers, plans erection of a 3-story plant building to cost about $150,000.

BOSTON—City institutions department, 811 City hall, has been advised that the 5-boiler unit at Long Island almshouse and hospital may need to be replaced.

BRIDGEWATER, MASS.—State, care department of correction, Boston, has been appropriated a sum for the alteration and improvement of the boiler unit at state farm here.

LEE, MASS.—Lee Electric Co., West Center and Railroad streets, contemplates removal of the adjoining plant of the Thistle Wire Works for the erection of a substation there that will cost about $100,000.

NORTH ADAMS, MASS.—James Hunter Machine Co., manufacturer of textile machinery, will build a plant addition to provide greater space for its erecting and assembling departments.

NORWOOD, MASS.—Town, care C. A. Bingham, clerk, plans an airport to include shops, hangars and other units. Cost will be probably $25,000.

PITTSFIELD, MASS.—Pittsfield Electric Co. plans a power plant addition to include equipment at Silver Lake, Mass., and which will cost approximately $100,000.

CAMDEN, N. J.—RCA Victor Co. Inc. advises that new building which is a part of the expansion program recently announced, will contain 155,000 square feet of floor space. Contract for this unit has been placed with Ballinger Co., architect and engineer, Twelfth and Chestnut streets, Philadelphia.

NEW YORK—Bellevue hospital, foot of East Twenty-sixth street, proposes a power plant addition.

NEW YORK—Department of hospitals, municipal building, will receive bids the last week in March for the alteration of boiler plant facilities at Harlem hospital.

NEW YORK—All Metal Stamping Corp., 128 Mott street, maker of spinning and stamping disks, suffered a fire damage to stock, machinery, and plant building recently.

SHERRILL, N. Y.—Oneida Community Ltd., manufacturer of plated ware, will probably rebuild local forge shop that was recently damaged by fire.

CLEARFIELD, PA.—Bell Mfg. Co., J. W. Wetter director, maker of collapsible steel containers, has moved its plant to Phillipsburg, Pa., near here, and expects to begin operations soon.

EAST STROUDSBURG, PA.—State, care secretary of property and supplies, Harrisburg, Pa., recently closed bids for the construction of a new power house building, and alteration of electric equipment at State Teacher's college here.

ERIE, PA.—General Electric Co., care J. Wright, East Lake road, will build a 1-story plant, 75 x 225 feet.

GLENSIDE, PA.—Buckingham Steel Co. Inc., fabricator and erector of structural steel, 5718 Second avenue, Brooklyn, N. Y., will transfer its plant to Oreland, Pa., near here. Sales offices will be maintained in Brooklyn. Edward F. Wade is president.

LANSDALE, PA.—Franklin Pottery Co. Inc. contemplates alteration of machine shop at Ninth and Kenilworth streets. J. R. Westbrook is engineer.

NEW CASTLE, PA. — Pennsylvania Power Co., care M. Moses, representative, Sharon, Pa., plans erecting a 2-story building to include shop here. Engineers are Stevens & Wood Inc., 120 Broadway, New York.

PHILADELPHIA—Gulf Refining Co., Syndham and Locust streets, will receive bids until March 7 for a mechanical shop to be erected at Thirtieth and Penrose avenues, Girard point.

PHILADELPHIA—Aetna Lampcraft Co., manufacturer of electric lighting fixtures and equipment, has leased plant space at Emerald and Hagert streets, building No. 8.

Resale News

F. B. STEARNS CO., Cleveland, manufacturer of automobiles, has been dissolved by its stockholders and liquidation of its assets is in progress, in charge of H. J. Leonard as liquidating agent. Industrial Plants Corp., New York, has been engaged to sell at public auction the machinery, manufacturing equipment and raw materials at the plant in Cleveland. The sale will be held at the plant, 12435 Euclid avenue, April 8, 9 and 10.

* * *

Bondholders of the Empire Knife Co., Winsted, Conn., have placed on sale the property of the company, including a large fully-equipped plant for the manufacture of pocket cutlery.

* * *

Assets of the Norwalk Steel Co., Norwalk, O., were bought at public auction sale, Feb. 20, by the Michles Iron & Metal Co. The property included 40 acres and a number of buildings, with equipment, including two cranes of 10 and 25 tons capacity, boilers and steelmaking equipment.

Southern States

ANNISTON, ALA.—Plant of the Ajax Foundry Co. was recently damaged by fire.

TAMPA, FLA.—City is negotiating an aeronautical development program to include acquisition of an airport. Engineer is B. R. Shaw, 810 Olive street, St. Louis.

ATLANTA, GA.—Georgia Power Co., 75 Ma-

rietta street, may double the capacity of the Piedmont substation here.

LOUISVILLE, KY.—Eagle-Picher Lead Co., 208 South La Salle street, Chicago, has decided upon a site here for the possible erection of a future $5,000,000 zinc plant. Arthur E. Bendelari is president.

SLIDELL, LA. — Canulette Shipbuilding Co. plans to build a machine shop costing about $15,000 that will be 40 x 200 feet.

WAKE FOREST, N. C.—Royal Cotton Mill has awarded contract for installation of diesel engine units in its power plants to Fairbanks, Morse & Co., 900 South Wabash street, Chicago.

CUSHING, OKLA.—F. M. Wisely Lockjoint Steel Derrick Corp., incorporation of which is noted, advises it is in the market for several punch presses, saw, welding equipment and machinery necessary to fabricate steel rigs. F. M. Wisely is manager.

CHARLESTON, S. C.—Williams Chemical Laboratory, manufacturing chemist, 253 King street, plans to install an electroplating plant. J. J. Williams is president.

MEMPHIS, TENN.—Rotary Stove Mfg. Co., care F. C. Spellings, 1085 Poplar avenue, is seeking a plant site for product manufacture.

MEMPHIS, TENN. — Branch manufacturing plant of the Southern States Iron Roofing Co., Savannah, Ga., was recently burned. Damage approximated $100,000.

MEMPHIS, TENN.—St. Louis-San Francisco railroad, Frisco building, St. Louis, plans a general repair shop and plant here that will cost approximately $500,000. F. G. Jonah is chief engineer.

MEMPHIS, TENN.—Tri-State Armature & Electric Works, 327 East Butler avenue, will expand plant with an addition to be erected on a site recently acquired. L. H. Lanahan is secretary and manager.

MURFREESBORO, TENN.—Bell Bros. & Co., makers of building supplies, West Main and Front streets, plans a 2-story plant.

DALLAS, TEX.—Southern Methodist university suffered a loss by fire in its laboratory building.

FORT WORTH, TEX.—Prall Huff Co., 1010 Monroe street, maker of soda fountain equipment and supplies, plans a 1-story addition with equipment that will cost about $60,000.

PALESTINE, TEX.—R. W. Crawford, North Judson, Ind., is considering sites here and at Rogers, Ark., as possible locations for a plant for the manufacture of refrigerator cars, upon which he holds patents for an electrical refrigerating feature.

NEWPORT NEWS, VA.—City, care council, plans an airport, for which a bond issue will soon be considered.

YORKTOWN, VA.—Bureau of yards and docks, navy department, Washington, plans extension to shop and storage building here.

Jefferson City, Mo., plans establishment of a chain plant here which with equipment will cost about $60,000.

ST. LOUIS—Board of education, 911 Locust street, will receive bids until late in March for a vocational school to include power plant and laboratories located at School street and Channing avenue.

ST. LOUIS—Mancha Storage Battery Locomotive Co., Kingshighway boulevard and Shaw avenue, contemplates building a plant addition. R. Mancha, 1909 South Kingshighway boulevard, is president.

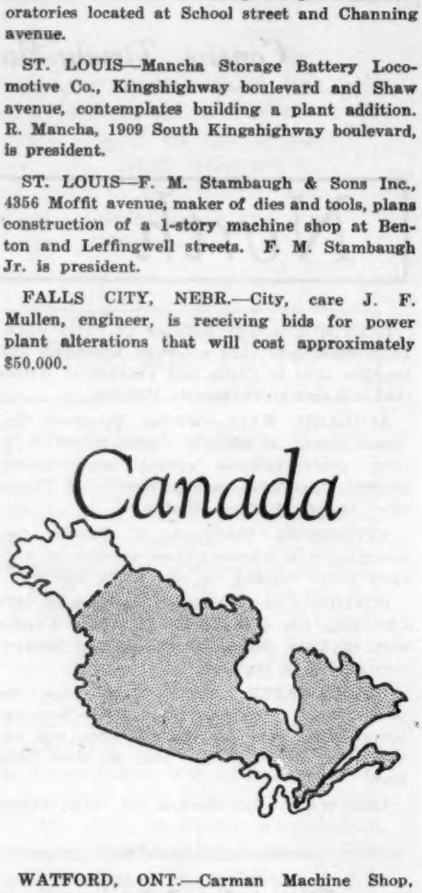
ST. LOUIS—F. M. Stambaugh & Sons Inc., 4356 Moffit avenue, maker of dies and tools, plans construction of a 1-story machine shop at Benton and Leffingwell streets. F. M. Stambaugh Jr. is president.

FALLS CITY, NEBR.—City, care J. F. Mullen, engineer, is receiving bids for power plant alterations that will cost approximately $50,000.

MARSHALL, MINN.—City has passed a bond issue for $50,000 for improvements to be made at the municipal power plant, and construction of a new boiler unit. Wallace Schultz is consulting engineer.

PLEASANT HILL, MO. — Missouri Public Service Co., Warrensburg, Mo., is reported planning extensions and improvements to power plants here.

SEDALIA, MO.—Lee Tire Chain Industries,



WATFORD, ONT.—Carman Machine Shop, Fourth street, is inquiring for machine and repair shop equipment.

WINDSOR, ONT.—Swedish Crucible Steel Co., Butler street and Grand Trunk railroad, Detroit, will build a warehouse building here. Henry M. Freier, 300 Murphy building, Detroit, is architect.

BATAVIA, ILL.—Emerson Brantingham Corp., operating a foundry, and manufacturer of auto parts and enamel ware, is remodeling plant and installing new machinery. A capacity production of 50 truck bodies daily will be attained.

CHICAGO—Red Wing Model Airplane & Supply Co. has leased a 1-story plant building at Cornelia avenue and Knox street for manufacturing purposes.

CHICAGO—H. E. Robertson Co., manufacturer of plumbing and brass goods, has leased a 2-story manufacturing plant at 25 North Ashland avenue from the Faith Mfg. Co., maker of tools and dies, for a period of years.

CHICAGO—Watling Mfg. Co., 701 West Washington boulevard, manufacturer of coin operated machines, has purchased plant at 4640 West Fulton street from the Houdaille Hershey Corp., and plans to occupy the new location about April 1.

LAKE FOREST, ILL.—Fred Parker, Farnum, Ill., plans installing a manufacturing plant here with equipment for production of a small type airplane, built on the principles of a glider and having a light motor. At present manufacturing equipment is housed in a plant near Wilson, Ill.

PRINCETON, ILL.—City, care A. C. Anderson, clerk, plans construction of a 1-story iron removal plant here that will cost about $25,000. Shields, Jordan & Roe, 205 West Wacker drive, Chicago, are consulting engineers.

FORT WAYNE, IND.—Bayard Tire Co., Fourth and Walnut streets, has awarded general contract for the construction of a machine shop and service station, 115 x 140 feet, to Anderson & Veach, Eighth and Chestnut streets.

KOKOMO, IND.—Continental Steel Corp., 1108 South Main street, advises that cold roll equipment including two stands, 26 x 66 inches and the second, 26 x 54 inches, are being installed. Motors are also being put in, and equipment is

expected to be in operation by March 15. (Noted Feb. 6.)

BENTON HARBOR, MICH.—Ross Carrier Co., maker of motor drive carriers, Miller and Second streets, has awarded contract for plant addition to M. W. Stock Construction Co., Broad street.

DETROIT—Riverside Machinery depot, 251 St. Aubin street, was recently damaged by fire.

DETROIT—Fisher Body Co., General Motors building, has awarded contract to J. A. Utley, contractor, 729 Penobscot building, for alteration of plant at Fort and West End avenue.

DETROIT—Federal Steel Corp., 126 South Artillery street, suffered a loss recently when a plant building under construction partly collapsed. (Noted Feb. 20.)

DETROIT—Kawneer Co., 642 Beaubien avenue, maker of metal store fronts, will diversify product and expand manufacture to include making of steel struts for airplanes.

GRAND RAPIDS, MICH.—Metalcraft Heater Corp., 13 McConnell street, plans a 1-story plant addition with equipment to cost approximately $30,000.

L'ANSE, MICH.—Duluth, South Shore & Atlantic railroad plans to rebuild its roundhouse here, which was damaged by fire with an estimated loss of $50,000. C. E. Urbahns, 602 West Superior street, Duluth, is general manager.

MANCELONA, MICH.—Antrim Iron Co. will improve plant and boiler house unit with expenditure approximating $100,000.

ALLIANCE, O.—Plant of Hardy Mfg. Co., maker of wood display racks, was recently damaged by fire.

CINCINNATI—City, care department of public works, has awarded general contract for municipal pumping station to be erected at municipal airport, Luken field, to William Miller & Son, 1950 Central parkway.

CLEVELAND—Parker Street Castings Co., Henry street and Pennsylvania railroad, has awarded contract for a 1-story foundry to R. Hanson Construction Co., 9323 Sandusky avenue. Cost is estimated at $40,000.

CRESTLINE, O.—Schill Bros. Stove & Furnace Co. foundry was recently damaged by fire and explosion. Loss totaling $250,000 was suffered.

DAYTON, O.—Brownell Co., 204 North Findlay street, manufacturer of boilers and engines, has awarded contract for 2-story plant addition. (Noted Dec. 19.)

DAYTON, O.—Acme Pattern & Mfg. Co., 326 North Findlay street, has been granted a permit for the construction of a 1-story 75 x 115-foot plant addition costing about $20,000. Hillsmith & Co. is the general contractor.

MENTOR, O.—National Radio Tube Corp., Fortieth and Perkins avenue, Cleveland, has had under consideration for some time possible removal of manufacturing plant to a site here.

WARREN, O.—Youngstown Pressed Steel Co. has awarded the contract for the construction of a 1-story, 60 x 380-foot enameling plant. Cost will be approximately $50,000.

HUNTINGTON, W. VA.—American Car & Foundry Co., Twenty-third and Third avenue, plans a sand blast unit addition that will cost approximately $50,000. John W. Ensign is district manager here. Home offices of the company are at 165 Broadway, New York.

GREEN BAY, WIS.—C. F. Loweth, chief engineer, Chicago, Milwaukee, St. Paul & Pacific Railway Co., Chicago, is taking bids for the construction of a new warehouse, 100 x 300 feet, and a dock 800 feet long, on the Fox river here, to cost $225,000 complete.

KILBOURN, WIS.—W. B. Shute, city clerk, closes bids March 5 for the complete installation of an elevated steel water tank and tower for the city water works system.

MILWAUKEE—C. H. Rimling, 2825 Clybourn street, is about to award contracts for the erection of a garage and service station, 83 x 135 feet, at 1120 Kinnickinnic avenue. Architect August G. Wolf, 613 Mitchell street, is in charge.

MILWAUKEE—Delta Mfg. Co., 1661-1667 Holton street, manufacturing woodworking tools and machinery, is building a 1-story shop addition, 40 x 90 feet, according to plans by Architect F. F. Drohlshagen, 447 Virginia street. H. E. Tautz is president and treasurer.

SHEBOYGAN, WIS.—The common council has awarded the contract for the low-lift electrical pumping equipment for the new $300,000 municipal filtration plant to the Wisconsin Power & Light Co., Madison, Wis.

SHEBOYGAN, WIS.—The board of public works is taking bids until March 14 for the construction of the new junior high school, to cost about $400,000. Plans are by Architect E. A. Stubenrauch, Sheboygan.

STEVENS POINT, WIS.—Arthur Peabody, state architect, Madison, Wis., is preparing plans for remodeling the old boiler room of the State Teachers college here into a chemical laboratory at a cost of about $20,000, including equipment. Edgar D. Doudna, Madison, is secretary of the board of regents.

WAUKESHA, WIS.—The county clerk of Waukesha county closes bids March 12 for the construction of a new power and light plant at the county insane asylum, to cost about $35,000.

Recent Incorporations

OTTAWA, ILL.—Ogden Engineering Co. has been incorporated to deal in machinery and furnaces by Hibbs & Pool, here.

STERLING, ILL.—Frantz Mfg. Co., 309 West Third street, has been incorporated with $300,000 capital to manufacture building hardware by L. C. Thorne at the above address.

INDIANAPOLIS—Headless Multiple Motor Corp. has been incorporated with 1000 no par shares to manufacture and sell machines and mechanical appliances by George O. Lehman, attorney, 206 Indiana Trust building.

KOKOMO, IND.—Globe American Corp. has been incorporated with 150,000 no par shares and 5000 preferred shares to manufacture stoves, furnaces and ranges by W. D. Harvey and Darrell S. Boyd.

DETROIT—Naylor Tool Salvage Co., 427 West Congress street, has been incorporated with $50,000 capital to deal in, manufacture and recondition, tools, dies and machinery.

DETROIT—American Art Metal Works Inc. has been incorporated to manufacture and deal in die castings, tools and automobile hardware by John Hartman, 5032 Twenty-third street.

DETROIT—Sewell Cushion Wheel Co. has been incorporated with 28,200 no par shares to engage in general manufacturing by Walter T. Sewell, 6468 Gratiot street.

DETROIT—Breisser Key Machine Co. has been incorporated with $200,000 capital to manufacture and deal in keys and machinery for making keys by Harry Briesser, 407 East Fort street.

DETROIT—D. D. Wessels & Sons Co. has been incorporated with 1250 no par shares to manufacture plumbing supplies by D. D. Wessels, 1635 Euclid avenue.

DETROIT—Marathon Products Corp. has been incorporated with $10,000 capital to manufacture and deal in electric pumps, cellar drainers and other electrical equipment by Roland D. Whitney, 3237 Linsdale avenue.

MUSKEGON, MICH.—A. J. Hunter & Co. has been incorporated to manufacture and sell plumbing, heating and general hardware supplies by Edward G. Schroeder, 252 Market street.

BRADLEY BEACH, N. J.—O. P. O. Chemical Co. Inc. has been incorporated with 5000 no par shares to manufacture chemicals by Edwin P. Longstreet, Asbury Park, N. J.

NEWARK, N. J.—Bloomfield Lathing Co. has been incorporated with $50,000 to deal in metal and wood lathing by Arnold M. Ungaro, attorney, 207 Market street.

NEWARK, N. J.—Century Mfg. Co. has been incorporated with $100,000 capital to manufacture chemicals by Herman E. Dultz, 972 Broad street.

NEW YORK—International Oxy-Acetylene Welding school has been incorporated with 100 common shares to operate a welding school by Hays, St. John, Abramson & Schulman, 43 Exchange place.

NEW YORK—Manhattan Drill & Tool Sharpening Co. has been incorporated with 100 common shares by J. E. Brill, 521 Fifth avenue.

NEW YORK—Caribbean Navigation Co. has been incorporated with 200 common shares to build vessels by Attorneys Albany Service Co., 299 Broadway.

NEW YORK—Goethals Construction Co. has been incorporated with 250 common shares to engage in the construction business by Ciller & Kraushaar, 51 Chambers street.

NEW YORK—Ritter & Gamsu Mfg. Co. has been incorporated with $10,000 capital to manufacture machines by D. & J. Freiberger, 1261 Broadway.

SYRACUSE, N. Y.—Group Parts Inc. has been incorporated with 1000 common shares of stock to deal in machine appliances by MacKenzie, Smith, Mitchell & Pierce, attorneys, Onandaga County Savings Bank building.

TROY, N. Y.—Troy Casting Co. has been incorporated with $10,000 capital by F. C. Claessens, attorney, Burdette building.

ALLIANCE, O.—General Incinerator Co. has been incorporated as a subsidiary of the Buckeye Jack & Mfg. Co., Alliance, with H. L. Bockfinder as president. Purpose of the new com-

pany is to manufacture incinerators for the home.

CANTON, O.—Burt Steel Products Co. has been incorporated with 250 no par shares by Ruff & Souers, 1200 Harter Bank building.

LIMA, O.—Steiner Bros. Inc. has been incorporated with 5000 no par shares to act as contracting and consulting engineers and as manufacturers and dealers in iron and steel products of all kinds by John Steiner, 1018 Ritchie street.

CUSHING, OKLA.—F. M. Wiseley Lock Joint Steel Derrick Corp. has been incorporated with $50,000 capital by T. J. Hughes Jr.

MIAMI, OKLA.—Standard Concentrating Corp. of Oklahoma has been incorporated with $10,000 capital to operate a concentrating mill for lead and zinc by F. N. Lewis, 320 Connor street, Joplin, Mo.

HARRISBURG, PA.—Railroad Switch Heating Corp. has been incorporated with $50,000 capital to manufacture and deal in switches, signals, machinery and mechanical and heating devices by Lloyd M. Basehoar, Trindle road, Mechanicsburg, Pa.

CHARLOTTESVILLE, VA.—Walker Foundry Co. Inc. has been incorporated with $20,000 capital to engage in foundry business by Charles M. Walker.

WINNIPEG, MAN.—Canadian Engineering & Construction Co. Ltd. has been incorporated with 100,000 no par shares to carry on the business of contractor and engineer by John K. Bell, Owen E. Bryan and Robert W. Killey.

HAMILTON, ONT.—Ret Tool & Specialties Ltd. has been incorporated with $40,000 capital stock by Freeman F. Treleaven, attorney, 1 James street.

ST. CATHERINES, ONT.—DeHamel Construction Co. Ltd. has been incorporated with 400 no par shares by Arthur C. Kingstone.

ST. CATHERINES, ONT.—Seagrave Fire Engines Ltd. has been incorporated with 500 no par shares to manufacture and deal in fire engines and fire fighting apparatus by William E. Lee, 2503 Bryden road, Columbus, O.

TORONTO, ONT.—Provincial Tire Corp. Ltd. has been incorporated to manufacture and deal in automobile accessories, parts and tools with $100,000 capital stock by Albert Mearns, attorney, Sun Life building.

TORONTO, ONT.—Canadian Jefferson Electric Co. Ltd. has been incorporated with $50,000 capital stock to manufacture and deal in electrical equipment and apparatus by Harry L. Wright, 228 Harbord street.

TORONTO, ONT.—Fleet Construction Co. Ltd. has been incorporated with $40,000 capital stock by Herbert R. Moses, 345 Bay street.

TORONTO, ONT.—Swedish General Electric Ltd. has been incorporated to deal in machinery castings and implements with $100,000 capital stock by George E. Atwood, 189 Rosedale Heights drive.

TORONTO, ONT. — McGregor-McIntyre Iron Works Ltd. has been incorporated with $25,000 capital stock to manufacture and deal in iron, steel and other metals by Norman H. Taylor, 48 Westmount.

TORONTO, ONT.—Parts Mfg. Co. of Canada Ltd. has been incorporated with $200,000 capital stock to manufacture automobiles, motor engines and machines by A. W. R. Sinclair, attorney, 24 King street west.

TORONTO, ONT.—Federal Contract & Engineering Ltd. has been incorporated with $30,500 capital and 10,000 no par shares to carry on the business of structural, civil and mechanical engineer by Robert A. Sampson, attorney, North Ontario building.

New Trade Publications

CHUCKS—City Machine & Tool Works, Dayton, O., in a bulletin, describes and illustrates its gear-grinding chuck.

NICKEL STEEL PLATE—International Nickel Co. Inc., New York, is distributing a reprint of a paper on the manufacture of nickel steel plate. Illustrations and tables add to its value.

KNIFE GRINDERS—Samuel C. Rogers & Co., Buffalo, has brought out a price list of knife grinders and saw sharpeners on the new machine tool dealers' form.

VENTILATION—Ilg Electric Ventilating Co., Chicago, presents in a bulletin a variety of installations of its ventilating devices for industrial and other uses.

ELECTRIC HEATERS—Edwin L. Wiegand Co., 7500 Thomas boulevard, Pittsburgh, has issued a folder describing its electric strip heaters. Several illustrations show the uses of these heaters.

CARBIDE LAMPS—National Carbide Sales Corp., New York, shows in a current bulletin its line of lamps for use with carbide gas, designed for use by railroads, subways, contractors, and others.

STEEL REFINING—Refined Steel Products Co., Pittsburgh, is circulating a booklet describing its method of refining steel by its special method. Much of the book is devoted to micrographs of various metals, showing inclusions and characteristics of the metals.

CONVEYORS—Universal System of Machine Moulding & Machinery Co. Ltd., 13-15 Wilson street, London, E. C. 2, has issued a folder on its new type roller conveyor. Advantages of the equipment, details of construction and specifications are given.

DRILLS AND STEELS—Edgar Allen & Co. Ltd., Sheffield, Eng., has issued the tenth edition of its booklet on steel for motorcars and aircraft, bringing the subject to date. Graphs and data tables present much information relative to these special steels. Its booklet on drill data has been carried to its sixth edition. It gives the history of twist drills, describes their proper use and gives practical notes on grinding and on drilling manganese steel with specially designed drills.

TUMBLING MILLS—W. W. Sly Mfg. Co., Cleveland, illustrates and describes its new type tumbling mill in a current folder. Advantages, details of construction, specifications and special features are described. Several illustrations show the various parts of the mill.

TRAMRAIL—Cleveland Electric Tramrail division of the Cleveland Crane & Engineering Co., Wickliffe, O., continues its series of bulletins on uses of its product by presentation of actual installations in the ceramic industry and for handling long, bulky and unwieldy loads.

MOLDING MACHINES—Milwaukee Foundry Equipment Co., Milwaukee, has issued a 24-page catalog of its molding machines. Each machine is described in detail and specifications are given. The booklet also contains many illustrations of typical installations. Letters of recommendation are included.

ELECTRIC FURNACES—Ajax Metal Co., electric furnace division, Frankford avenue below Girard avenue, Philadelphia, is circulating a folder on its electric furnaces. The folder describes the growth of the company and outlines its service to the customer. Several illustrations show various parts of the company's plant.

FLUXES—Mathieson Alkali Works Inc., 250 Park avenue, New York, has issued a folder describing the use of its patent flux in nonferrous metal producing shops. Characteristics of the flux are explained and the proper methods of addition to open-flame, down-draft, electric arc, induction, crucible and reverberatory furnaces are explained. Its addition to ladles also is discussed.

PARSONS' WHITE BRASS—Cramp Brass & Iron Foundries Co., Philadelphia, has issued a folder on the uses of Parsons' white brass as a bearing metal for marine work. The folder gives information on the properties of bearing metals and shows micrographs of babbitt and white brass. Physical properties also are discussed. Directions are given for tinning bronze shells and babbitting of bearings.

CONVEYOR FURNACES—Hevi Duty Electric Co., Milwaukee, has published a bulletin covering electric conveyor furnaces of the floating belt type, the belt conveying parts through the heat treating furnace being of nickel chromium wire. Another bulletin by the same company contains detailed descriptions and specifications of a full line of laboratory furnaces and hot plates.

ROLLER BEARINGS—American Roller Bearing Co., Pittsburgh, has combined in its current catalog a full presentation of its entire line of roller bearings designed particularly for heavy duty service in machinery and equipment. A useful feature is a series of drawings showing various methods of installation, relative to endplate construction, doweling of inner races and control of thrust, as well as usual methods of installing bearings in many kinds of equipment.

MOLDING MACHINES—International Molding Machine Co., 2608-2624 West Sixteenth street, Chicago, has issued a catalog of its molding machines. Each page contains an illustration of the machine discussed and tells the type, method of operation and the sizes in which it is made. One page has several illustrations showing typical installations. The last page contains an index of the material. The booklet contains 40 pages.

RECORDERS—Graphic records of conditions as an aid to attaining the best for a given industrial process are suggested in a current bulletin by the Esterline-Angus Co., Indianapolis. Among the valuable information attainable by recorders is position, including liquid levels, thickness of materials, depth of materials on conveyors, and similar data. Recorders are of mechanical or electric types, according to requirements of installation.

Active Members of the American Institute of Steel Construction

This list of dependable and progressive structural steel companies is published in response to many requests. Every one of these members has subscribed to the Institute's standards of practice and to its ideals of business conduct. Individually and collectively these companies represent leadership, responsibility, progressiveness.

ALABAMA
The Ingalls Iron Works Company.....Birmingham
Nashville Bridge Company.....Birmingham
Decatur Iron & Steel Company.....Decatur

ARIZONA
Allison Steel Manufacturing Co.....Phoenix

ARKANSAS
Arkansas Foundry Company.....Little Rock

CALIFORNIA
Bromhacher Iron Works.....Los Angeles
Consolidated Steel Corporation.....Los Angeles
McClintic-Marshall Co. of California.....Los Angeles
Modern Iron Works, Inc.....Los Angeles
Pacific Iron & Steel Co., Inc.....Los Angeles
California Steel Company, Inc.....Oakland
Herrick Iron Works.....Oakland
The Moore Dry Dock Company.....Oakland
Pacific Coast Engineering Company.....Oakland
Palm Iron & Bridge Works.....Sacramento
National Iron Works, Inc.....San Diego
Standard Iron Works.....San Diego
Dyer Bros. Golden West Iron Works, Inc.....San Francisco
Golden Gate Iron Works.....San Francisco
Judson-Pacific Company.....San Francisco
McClintic-Marshall Co. of California.....San Francisco
Mortenson Construction Company...San Francisco
Schrader Iron Works, Inc.....San Francisco
Western Iron Works.....San Francisco

COLORADO
The E. Burkhardt & Sons Steel & Iron Works Co., Inc.....Denver
The Denver Steel & Iron Works Co.....Denver
The Midwest Steel & Iron Works Co.....Denver
The Midwest Steel & Iron Works Co.....Pueblo
Power Iron Works, Inc.....Pueblo

CONNECTICUT
The Berlin Construction Company, Inc.....Berlin

DISTRICT OF COLUMBIA
Barber & Ross, Inc.....Washington

GEORGIA
Austin Bros. Bridge Co. of Atlanta, Ga.....Atlanta

HAWAII
American Hawaiian Steel Co.....Honolulu, T. H.

ILLINOIS
A. Bolter's Sons.....Chicago
Continental Bridge Company.....Chicago
Duffin Iron Company.....Chicago
Federal Iron Works.....Chicago
Gage Structural Steel Co.....Chicago
McClintic-Marshall Company.....Chicago
Mississippi Valley Structural Steel Co.....Chicago
Union Foundry Works.....Chicago
Vanderkloot Steel Works.....Chicago
Vierling Steel Works.....Chicago
Wendnagel & Company.....Chicago
Midland Structural Steel Co.....Cicero
Mississippi Valley Structural Steel Co..Decatur
Illinois Steel Bridge Company.....Jacksonville
A. Lucas & Sons.....Peoria
Michelmann Steel Construction Co.....Quincy
Rock Island Bridge & Iron Works.....Rock Island

INDIANA
International Steel & Iron Company....Evansville
Fort Wayne Foundry & Machine Co.....Fort Wayne
Central States Bridge & Structural Co.....Indianapolis
Ghiger & Peters, Inc.....Indianapolis
Hetherington & Berner, Inc.....Indianapolis
Insley Manufacturing Company.....Indianapolis
Stefco Steel Company.....Michigan City
Indiana Bridge Company.....Muncie
Pan-American Bridge Company.....Newcastle
The Rochester Bridge Company.....Rochester
Vincennes Bridge Company.....Vincennes

IOWA
Clinton Bridge Works.....Clinton
Des Moines Steel Company.....Des Moines
Pittsburgh-Des Moines Steel Co.....Des Moines
Davenport Machine & Foundry Co.....Davenport

KANSAS
The Hutchinson Foundry & Steel Co..Hutchinson
Kansas City Structural Steel Co.....Kansas City
The Capital Iron Works Company.....Topeka
The Topeka Foundry & Iron Works Company..Topeka
Ben Sibbitt Iron & Foundry Co.....Wichita

KENTUCKY
Grainger & Company.....Louisville
Louisville Bridge & Iron Company.....Louisville

KENTUCKY (*Continued*)
The Pyne Company, Inc.....Louisville
Snead Architectural Iron Works, Inc..Louisville

LOUISIANA
Lukens Steel Company.....New Orleans
The J. B. Beaird Corporation.....Shreveport

MAINE
Mcquier & Jones Company.....Portland

MARYLAND
Dietrich Brothers.....Baltimore
Maryland Metal Building Co.....Baltimore

MASSACHUSETTS
New England Structural Company.....Boston
Boston Structural Steel Co.....Cambridge
A. O. Wilson Structural Company.....Cambridge
Haarmann Steel Company.....Holyoke
Eastern Bridge & Structural Co.....Worcester

MICHIGAN
Brown-Hutchinson Iron Works.....Detroit
F. A. Chapphr Iron Works.....Detroit
Daigle Iron Works.....Detroit
Detroit Metal & Steel Works.....Detroit
Hub Steel Company.....Detroit
Russel Steel Construction Co.....Detroit
Whitehead & Kales Company.....Detroit
Flint Structural Steel Company.....Flint
The Jarvis Engineering Works.....Lansing

MINNESOTA
Crown Iron Works Company.....Minneapolis
Minneapolis-Moline Power Implement Co.....Minneapolis
St. Paul Foundry Company.....St. Paul
St. Paul Structural Steel Company.....St. Paul

MISSOURI
St. Joseph Structural Steel Co.....St. Joseph
Atlas Iron Works.....St. Louis
Banner Iron Works.....St. Louis
Mississippi Valley Structural Steel Co. St. Louis
St. Louis Structural Steel Company.....St. Louis
Stupp Bros. Bridge & Iron Company.....St. Louis
Superior Structural Steel Co.....St. Louis

NEBRASKA
Omaha Steel Works.....Omaha
Paxton & Vierling Iron Works.....Omaha

NEW HAMPSHIRE
Lyons Iron Works, Inc.....Manchester

NEW JERSEY
James E. Brooks Company.....Bloomfield
F. G. Schaefer Iron Works.....Edgewater
H. R. Goeller, Inc.....Hillside
Albert Smith's Sons.....Irvington
Breen Iron Works.....Newark
Calumet Iron Works.....Newark
Davis & Averill, Inc.....Newark
Charles Goeller Construction Co.....Newark
Paterson Bridge Company.....Paterson

NEW YORK
James McKinney & Son.....Albany
Buffalo Structural Steel Co.....Buffalo
August Feine & Sons Co., Inc.....Buffalo
The Heneesey-Mann Structural Co., Inc....Buffalo
Kellogg Structural Steel Company.....Buffalo
Lackawanna Steel Construction Corp.....Buffalo
R. S. McMannus Steel Construction Co., Inc.....Buffalo
The George A. Just Company.....Long Island City
National Bridge Works.....Long Island City
Hay Foundry & Iron Works.....New York
Hedden Iron Construction Co.....New York
Lewering & Garrigues Company.....New York
Post & McCord, Inc.....New York
Genesee Bridge Company, Inc.....Rochester
F. L. Heughes & Company, Inc.....Rochester
Smith & Caffrey Company.....Syracuse
Syracuse Engineering Company, Inc.....Syracuse
Union Structural, Inc.....Syracuse
Utica Steam Engine & Boiler Works.....Utica
Utica Structural Steel Corporation.....Utica

NORTH CAROLINA
Southern Engineering Company.....Charlotte
Carolina Steel & Iron Co.....Greensboro

OHIO
The Bellefontaine Bridge & Steel Co.....Bellefontaine
The Brookville Bridge Co.....Brookville
Hiner Structural Steel Company.....Canton
The Macomber Steel Company.....Canton
The General Iron Works Co.....Cincinnati
The Grimm Iron Works Co.....Cincinnati
The L. Schreiber & Sons Co.....Cincinnati
The Southern Ohio Iron Works Co.....Cincinnati
T. H. Brooks & Co.....Cleveland

OHIO (*Continued*)
The Colonial Iron Works Company.....Cleveland
Kilroy Structural Steel Co.....Cleveland
The National Iron & Wire Co.....Cleveland
Republic Structural Iron Works.....Cleveland
The C. E. Morris Company.....Columbus
The Oregonia Bridge Company, Inc.....Lebanon
The Massillon Bridge & Structural Co. Massillon
The Mt. Vernon Bridge Co.....Mt. Vernon
The Jones Bros. Structural Steel Co.....Ravenna
The Toledo Wire & Iron Co.....Toledo
The Champion Bridge Company.....Wilmington

OKLAHOMA
Muskogee Iron Works, Inc.....Muskogee
J. B. Klein Iron & Foundry Co.....Oklahoma City
Braden Steel Corporation.....Tulsa
Patterson Steel Company.....Tulsa

OREGON
Poole & McGonigle, Inc.....Portland

PENNSYLVANIA
Lehigh Structural Steel Co.....Allentown
Bethlehem Construction Company.....Bethlehem
Rogers Structural Steel Company.....Corry
Erie Steel Construction Co.....Erie
Belmont Iron Works.....Philadelphia
S. G. Matthews & Company.....Philadelphia
Montgomery Iron & Steel Co.....Philadelphia
Morris, Wheeler & Co., Inc.....Philadelphia
The Phoenix Bridge Company.....Phoenixville
W. N. Kratzer Company.....Pittsburgh
McClintic-Marshall Company.....Pittsburgh
Pittsburgh Bridge & Iron Works.....Pittsburgh
Pittsburgh-Des Moines Steel Co.....Pittsburgh
Shoemaker Bridge Company.....Pottstown
Bauman Iron Works.....Reading
Anthracite Bridge Company.....Scranton
Wayne Iron Works.....Wayne

RHODE ISLAND
Providence Steel & Iron Company.....Providence
The James H. Tower Iron Works.....Providence

TENNESSEE
Converse Bridge & Steel Company.....Chattanooga
Pidgeon-Thomas Iron Co.....Memphis
Nashville Bridge Company.....Nashville

TEXAS
The Petroleum Iron Works Company.....Beaumont
Austin Brothers.....Dallas
Mosher Steel & Machinery Company.....Dallas
El Paso Foundry & Machine Co.....El Paso
Fort Worth Structural Steel Co.....Fort Worth
Hartwell Iron Works.....Houston
Houston Structural Steel Company.....Houston
Orange Car & Steel Company.....Orange
Alamo Iron Works.....San Antonio
Brandt Iron Works.....San Antonio

VERMONT
Vermont Structural Steel Corp.....Burlington

VIRGINIA
Richmond Structural Steel Co., Inc.....Richmond
Roanoke Iron & Bridge Works, Inc.....Roanoke

WASHINGTON
Bacon & Matheson Forge Co.....Seattle
Hoffus Steel & Equipment Company.....Seattle
Isaacson Iron Works.....Seattle
Pacific Car & Foundry Company.....Seattle
Wallace Bridge & Structural Steel Co....Seattle
Lidgerwood Pacific Company.....Tacoma
Star Iron & Steel Co.....Tacoma

WEST VIRGINIA
James J. Weiler & Sons.....Huntington
Wheeling Structural Steel Company.....Wheeling

WISCONSIN
Hackendahl & Schmidt Co.....Milwaukee
C. Hennecke Company.....Milwaukee
Milwaukee Bridge Co.....Milwaukee
Milwaukee Structural Steel Co.....Milwaukee
A. F. Wagner Architectural Iron Works.....Milwaukee
Worden-Allen Company.....Milwaukee
Lakeside Bridge & Steel Co.....N. Milwaukee
Wisconsin Bridge & Iron Co.....N. Milwaukee

WYOMING
Sheridan Iron Works, Inc.....Sheridan

CANADA
Hamilton Bridge Company, Ltd.....Hamilton, Ont.
London Structural Steel Co., Ltd.....London, Ont.
Canadian Vickers, Ltd.....Montreal, P. Q.
Dominion Bridge Company, Ltd.....Montreal, P. Q.
Eastern Canada Steel & Iron Works, Ltd.....Quebec, P. Q.
Sarnia Bridge Co., Ltd.....Sarnia, Ont.
Disher Steel Construction Co., Ltd. Toronto, Ont.
John T. Hepburn, Ltd.....Toronto, Ont.
Dominion Bridge Company, Ltd.....Toronto, Ont.
Reid & Brown Structural Steel & Iron Works, Ltd.....Toronto, Ont.
Western Bridge Company, Ltd.....Vancouver, B. C.
Standard Steel Construction Co., Ltd.....Welland, Ont.
Manitoba Bridge & Iron Works, Ltd.....Winnipeg, Man.

MEXICO
Cia. Fundidora de Fierro y Acero de Monterrey, S. A.....Mexico, D. F.

AMERICAN INSTITUTE OF STEEL CONSTRUCTION

The co-operative non-profit service organization of the structural steel industry of the United States and Canada. Correspondence is invited. 200 Madison Avenue, New York City. District offices in New York, Worcester, Philadelphia, Birmingham, Cleveland, Chicago, Milwaukee, St. Louis, Topeka, Dallas and San Francisco.

The Institute publishes twelve booklets,

STEEL

INSURES STRENGTH

AND SECURITY

one on practically every type of steel structure, and provides also in one volume, "The Standard Specification for Structural Steel for Buildings," "The Standard Specification for Fireproofing Structural Steel Buildings," and "The Code of Standard Practice." Any or all of these may be had without charge, simply by addressing the Institute at any of its offices.

Pipe and Tube Prices—Plate Extras

Steel Pipe

(Base price $200 per ton)

Pittsburgh and Lorain basing discounts, jobber's carloads.

Evanston, Ill., and Indiana Harbor, Ind., take differential 2 points less discount.

Chicago takes differential 2½ points less than Pittsburgh-Lorain basis.

Butt Weld

	Black	Galvanized
⅛-inch	45	19½
¼ and ⅜-inch	51	25½
½-inch	56	42½
¾-inch	60	48½
1 to 3-inch	62	50½

Lap Weld

2-inch	55	43½
2½ to 6-inch	59	47½
7 to 8-inch	56	43½
9 and 10-inch	54	41½
11 and 12-inch	53	40½

REAMED AND DRIFTED

Butt Weld

1 to 3-inch	60	48½

Lap Weld

2-inch	53	41½
2½ to 6-inch	57	45½

EXTRA STRONG—PLAIN ENDS

Butt Weld

⅛-inch	41	24½
¼ and ⅜-inch	47	30½
½-inch	53	42½
¾-inch	58	47½
1 to 1½-inch	60	49½
2 to 3-inch	61	50½

Lap Weld

2-inch	53	42½
2½ to 4-inch	57	46½
4½ to 6-inch	56	45½
7 to 8-inch	52	39½
9 and 10-inch	45	32½
11 and 12-inch	44	31½

DOUBLE EXTRA STRONG

Butt Weld

½-inch	42	32½
¾ to 1½-inch	45	35½
2 to 2½-inch	47	37½

To large jobbers these discounts are increased by 1 point and two supplementary discounts of 5 per cent on black, and 1½ points and two supplementary discounts of 5 per cent on galvanized.

Wrought Iron Pipe

Pittsburgh basing discounts, jobbers' carloads. Individual quotations made on delivered basis.

THREADS AND COUPLINGS

Butt Weld

	Black	Galv.
¼ and ⅜-inch	+11	+36
½-inch	23	5
¾-inch	28	11
1 and 1¼-inch	31	15
1½ and 2-inch	35	18

Lap Weld

1¼ and 1½-inch	Upon application	
2-inch	23	9
2½ to 3½-inch	28	12
4 to 6-inch	30	17
7 and 8-inch	29	16
9 to 12-inch	26	11

REAMED AND DRIFTED

2-inch to 6-inch—Two points less than above

EXTRA STRONG, PLAIN ENDS

¼ and ⅜-inch	+13	+48
½-inch	23	7
¾-inch	28	12
1to 2-inch	34	18

Lap Weld

2-inch	29	13
2½ to 4-inch	34	20
4½ to 6-inch	33	19
7 and 8-inch	31	17
9 to 12-inch	21	8

DOUBLE EXTRA STRONG

Butt Weld

½-inch	+47½	+59½
¾-inch	+28	+40
1-inch	+34	+46
1¼-inch	+28	+40
1½-inch	+27	+39

Lap Weld

2 and 2½-inch	+13	+25
3 to 4-inch	+ 8	+17
4½ to 6-inch	+ 9	+18
8-inch	+12	.....

Jobbers obtain additional preferential discounts of 1, 5 and 2½ on black and galvanized wrought iron pipe.

On extra or double extra strong pipe fitted with threads and couplings basing discount lowered 5 points from plain end price. Fitted with threads only, basing discount lowered 3 points for random lengths.

Boiler Tubes

Pittsburgh carload discounts

STEEL (Lap Weld)

2 and 2¼-inch	38 off
2½ and 2¾-inch	46 off
3-inch	52 off
3½ to 3¾-inch	54 off
4-inch	57 off
4½ to 6-inch	46 off

Subject to two 5 per cent discounts on full carload shipments. On less than 10,000 pounds, base discount reduced 6 points and one 5 per cent allowed. Over 10,000 pounds to carload, base discount reduced 4 points and two 5 per cents allowed.

CHARCOAL IRON

1½-inch	1 off
1¾-inch	8 off
2 and 2¼-inch	13 off
2½ and 2¾-inch	16 off
3-inch	17 off
3½ to 3½-inch	18 off
4-inch	20 off
4½-inch	21 off

Subject to 10 per cent discount on full carload lots. On less than 10,000 pounds, base discount reduced 2 points and no preferential allowed. On 10,000 pounds to carload, 5 per cent preferential allowed.

SEAMLESS COLD DRAWN

1-inch	61 off
1¼ and 1½-inch	53 off
1¾-inch	37 off
2 and 2¼-inch	32 off
2½ and 2¾-inch	40 off
3-inch	46 off
3¼ and 3½-inch	48 off
4-inch	51 off
4½, 5 and 6-inch	40 off

SEAMLESS HOT ROLLED

1¾-inch	37 off
2 and 2¼-inch	38 off
2½ and 2¾-inch	46 off
3-inch	52 off
3¼ and 3½-inch	54 off
4-inch	57 off
4½, 5 and 6-inch	46 off

Subject to 5 per cent supplementary discount for carload lots. On less than 10,000 pounds, base discount reduced 6 points. On 10,000 pounds to carload, base discount reduced 4 points and one 5 per cent allowed.

SEAMLESS STEEL MERCHANT BOILER TUBES

Extras:

Add 5 per cent for lengths over 24 feet and not over 26 feet.

Smaller tubes than 1-inch and lighter than standard gage to be sold at mechanical tubing list and discount.

Intermediate sizes and gages not listed above take price of next larger outside diameter and heavier gage.

SEAMLESS STEEL MECHANICAL TUBING

Base Discounts on New List July 1, 1925

Carbon 0.10 to 0.30 per cent.....55 to 55 off
Carbon 0.30 to 0.40 per cent.....45 to 50 off

Plus usual extras for forming and for long lengths over 18 feet and for commercially exact lengths.

SEAMLESS STEEL LOCOMOTIVE AND SUPERHEATER TUBES

Outside diameter	Gage	Net price per foot f.o.b. Pittsburgh Price
2-inch	12-gage	14¼c
2-inch	11-gage	15c
2-inch	10-gage	16c
2¼-inch	12-gage	16c
2¼-inch	11-gage	17c
2¼-inch	10-gage	18c
3-inch	7-gage	33c
5⅝-inch	9-gage	50c
5½-inch	9-gage	52c

Plus usual extras for forming and for lengths over 24 feet.

Plate Extras

BASE

Rectangular plates, tank steel or conforming to manufacturers' Standard Specifications for structural steel, date Nov. 24, 1922, or equivalent, ¼-inch thick and over on thinnest edge (except for ¼-inch or 72 inches wide when ordered to weight in pounds per square foot—see width and gage extras), 100 inches wide and under, down to but not including 6 inches wide, 5 feet 0 inch long up to published limit in length but not over 80 feet 0 inch, are base. Extras per pound for width or diameter.

All Plates Rectangular or Otherwise

¼-inch thick and heavier, but not less than 11 pounds per square foot, if ordered to weight.

Over 100 to and including 110 inches	.05c
Over 110 to and including 115 inches	.10c
Over 115 to and including 120 inches	.15c
Over 120 to and including 125 inches	.25c
Over 125 to and including 128 inches	.50c

Plates less than ¼-inch or lighter than 11 pounds per square foot.

Over 72 to and including 84 inches	.10c
Over 84 to and including 96 inches	.20c
Over 96 to and including 100 inches	.30c

Over 100 inches add .35c to width extras for plates ¼-inch thick and heavier.

GAGE

Plates Not Exceeding 72 Inches Wide

Plates less than ¼-inch gage, to and including 3/16-inch; or lighter than 10.2 pounds per square foot, to and including 7.65 pounds square foot..... .20c

Plates Over 72 Inches Wide

Plates less than ¼-inch gage, to and including 3/16-inch; or lighter than 11 pounds per square foot to but not including 7.65 pounds square foot.... .20c
Plates ordered 7.65 pounds square foot .30c

QUALITIES

Pressing steel	.10c
Flange steel (boiler grade)	.15c
Ordinary firebox steel	.20c
Stillbottom steel	.30c
Locomotive firebox steel	.50c
Marine steel	1.50c
Hull materials subject to U. S. Navy Dept. specifications for medium or soft steel	.10c
High tensile hull steel subject to U. S. navy department or equivalent specifications	1.00c
Boiler steel subject to U. S. navy department specifications, class A-B..	1.50c

Hull plates to hull specifications, required to stand cold flanging, take extra for flange steel.

Floor Plates

Checkered plates 1.75c

Checkered plates are not furnished to sketch and are rolled from "Stock Steel" only. No physical tests will be made on checkered plates.

INSPECTION

Mill inspection ..... No extra

Charges for other inspection, such as Lloyd's or American bureau of shipping, will be made by inspection bureau direct to buyer.

CUTTING

LENGTH OR DIAMETER

All Plates, Rectangular or Otherwise

Five feet and over up to published limit of length, but not over 80 feet	No extra
Under 5 feet to 3 feet inclusive	.10c
Under 3 feet to 2 feet inclusive	.25c
Under 2 feet to 1 foot inclusive	.50c
Under 1 foot	1.55c
Over 80 feet to 100 feet inclusive	.10c

Over 100 feet add .25c plus .05c for every additional 2 feet or fraction thereof.

Regular Sketches

With not more than four straight cuts (Including straight taper plates)
Additional extra ..... .10c

Irregular Sketches

With not more than four straight cuts. (Sketches cannot be sheared with re-entrant angles)
Additional extra ..... .20c